The Influence of the Quality of the Built Environment on Social Cohesion in English Neighbourhoods

Nicola Dempsey

Postgraduate Research School

School of the Built Environment

Oxford Brookes University

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The following have been excluded at the request of the university:

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Abstract

High quality built environments are promoted in urban planning and design in the UK on the grounds that they support positive social activity and behaviour. There is a severe lack of empirical evidence examining these concepts holistically, and there is little evidence to support such claims made in theory, policy and practice in the UK. Therefore, the aim of this research is to determine the relationship, if any, between the quality of the built environment and social cohesion in English neighbourhoods. As quality seems to be a multi-faceted concept, a further aim is to identify those features of quality of the built environment most likely to support social cohesion in English neighbourhoods.

The methodology adopted in this research is primarily quantitative and takes the form of a large-scale multivariate investigation of the influence of quality of the built environment on social cohesion, both of which were operationalized as a series of indicators. The data were collected using a number of different methods including a questionnaire survey and semi-structured interview, and the nature and extent of relationships were investigated through statistical analysis.

The findings show that a number of features of quality of the built environment are significantly associated with dimensions of social cohesion, however the nature and extent of the associations vary from feature to feature. There is consistent evidence to suggest that features of quality of the built environment, on the whole, do positively contribute to residents' sense of community, feelings of trust and reciprocity, feelings of safety, and sense of place attachment. These findings support existing policy to varying degrees and, on the whole, support claims made in the current UK government's 'sustainable communities' plan and associated policies.

This research provides tools for further empirical investigation which include a set of indicators which express the abstract concepts of quality and social cohesion in operational terms and a method of neighbourhood delineation which takes into account residents' perceptions of neighbourhood boundaries. It makes a contribution to the extensive body of theoretical, and to a lesser extent, empirical evidence to shed light on the relationship between the physical environment and social activity and behaviour.

Chapter One

Introduction

Chapter One – Introduction

'The quality of our public space affects the quality of all our lives. It affects how we feel about where we live, where we work and where our children play'.

Deputy Prime Minister John Prescott (Office of the Deputy Prime Minister, 2002, p. 5)

'We need stronger local communities and an improved local quality of life. Streets where parents feel safe to let their children walk to school. Where people want to use the parks. Where graffiti, vandalism, litter and dereliction is not tolerated. Where the environment in which we live fosters rather than alienates a sense of local community and mutual responsibility'.

Prime Minister Tony Blair, Croydon, April 2001 (ibid., p. 9)

There is sustained focus in theory and policy on the role that the built environment has to play in supporting everyday social activity (Amin *et al.*, 2000; ODPM, 2005g). The UK government has adopted a policy vision of 'prosperous and cohesive communities, [which offer] a safe, healthy and sustainable environment for all' (Department for Communities and Local Government [DCLG], 2006). To achieve this, a high quality built environment has been identified as a factor which can have an important influence on the level of cohesion in a social setting (Commission for Architecture and the Built Environment [CABE], 2004; ODPM, 2005a; Hill, 2004). However, there is little empirical evidence to corroborate such claims of a relationship between quality of the built environment and social cohesion. The objective of this research is therefore to address the dearth of existing evidence by determining whether or not there is an association between the features that constitute a high quality built environment and social cohesion. The following sections explain the need for this research and outline the methods by which this question of relationship will be answered.

1.1 The focus on high quality built environments

Theorists, policy makers and practitioners have long described the importance of built environments which are of a high quality. Focus on improving the quality of the built environment frequently rises because of a claimed need to enhance the existing environment. In response to cities being 'ulcers on the face of our beautiful island', Ebenezer Howard created the Garden City concept in the late nineteenth century with the aim of combining the best of both country and city life 'without the disadvantages of either'

(Cowan, 1997, p. 11). Raymond Unwin aspired to create beautiful homes in beautiful gardens 'and a beautiful city for all' (Unwin, 1906, cited in Miller, 1992). Joseph Rowntree promoted villages with 'more wholesome living conditions' in the early 1900s (Rowntree, 1907, cited in Miller, 1992). And in the US in the early twentieth century, Daniel Burnham aimed, in Chicago, to 'restore to the city a lost visual and aesthetic harmony' (Hall, 2002a, p. 192). Such traditions continued through the twentieth and into the twenty-first century in the UK, through policies and guidance specifying residential densities and recommending designs and layouts of residential areas and public spaces (Central Housing Advisory Committee, 1944; Department of the Environment Transport and the Regions, 2000b; Jenks, 1983; Local Government Board, 1918; Ministry of Housing and Local Government, 1952; Ministry of Housing and Local Government, 1962; Office of the Deputy Prime Minister, 2005a).

Recent British housing policy has placed strong emphasis on the quality of the built environment in order 'to break the mould of mediocrity that has characterized so much new housing development' (CABE and Department for Transport Local Government and the Regions [DTLR], 2002, p. 5). In 1999, the government funded body, CABE, was created to 'stand[s] for an improvement in people's quality of life through good design' and 'champion[s] well-designed buildings and public space' (2006, p. 3). Hastings *et al.* comment that the current focus on the quality of the built environment is stronger than it has ever been, in particular through its adoption in UK policy centred on the '"liveability" of residential areas' in terms of how 'clean, safe and green' public spaces and streets are (2005, p. 2; ODPM, 2002). The National Strategy for Neighbourhood Renewal cites government priorities for improving the quality of the built environment 'across the country by 2008' as creation of attractive and welcoming parks, play areas and public spaces, improvement of the physical structure of places, and 'making places cleaner and maintaining them better' (ODPM, 2005d, p. 17; Social Exclusion Unit [SEU] 2001). Recent national initiatives and publications discuss the best and worst streets and towns, perhaps suggesting that this is something that the public and media feel strongly about (Jordison, 2003; www.streetsofshame.org.uk). This is supported by research conducted by the Department for Environment, Food and Rural Affairs (Defra) which indicates that the quality of the built environment in their immediate residential locality is invariably a top priority for residents (2004, p. 3).

The government's urban white paper published in 2000 identifies the importance of design and quality in improving urban areas to attract people back into urban neighbourhoods (DETR, 2000a). A major point in this policy document is the provision of 'plenty of good quality public spaces' and 'attractive homes' (ibid., p. 9). Concentration on the importance of design has led to a plethora of prescriptive urban design guidance,

which offers advice on 'the art of making places for people' (CABE and DETR, 2000; 2002; Llewelyn-Davies, 2000; Urban Task Force, 1999). Such literature defines the objectives of urban design, which include giving a place 'its own identity', creating a place 'that is easy to get to and move through', and a 'place that can change easily...with variety and choice' (CABE and DETR, 2000, p. 15). Llewelyn-Davies, in the *Urban Design Compendium*, describes urban design as a process of creating 'safe, comfortable, varied and attractive' places for people. They should 'strike a balance between the natural and man-made environment' (2000, p. 14).

Such generalized statements, arguably difficult to interpret and implement, are commonly used by theorists, practitioners and policy-makers. Bentley *et al.* argue that 'ideals are not enough: they have to be linked through appropriate design ideas to the fabric of the built environment itself' (1985, p. 9). Various attempts have been made to identify the specific characteristics of high quality urban places (Bentley *et al.*, 1985; Duany, 2003; Lynch, 1960; Jacobs and Appleyard, 1987). Some of these approaches focus on the visual quality of the built environment (Cullen, 1961; Lynch, 1960; Nasar, 1998), while others focus on the importance of the meaning that the built environment holds for residents and other users (Rapoport, 1982; Relph, 1976). Other design strategies relate to the design of neighbourhoods, often in the form of principles or objectives, without consistently establishing the means by which they are to be achieved (Burton and Mitchell, 2006, p. 12). Such design strategies are provided in the principles established by Clarence Perry's neighbourhood unit in the 1920s in the US, more recent new urbanism theory in the US and the Urban Villages group in the UK among others (Aldous, 1992; Carmona *et al.*, 2003; Hallman, 1984; Robbins, 2004). In the UK recent policy guidance on the design of neighbourhoods and public space largely accepts and promotes the principles of sustainability (Barton *et al.*, 2003; Burton and Mitchell, 2006; Urban Task Force, 1999; ODPM, 2003a). However, the requirements of a sustainable community are also described in relatively abstract terms, such as a 'safe and healthy environment with well-designed public and green space' with a 'sense of place' (ODPM, 2003a, p. 5). It can be argued that the very nature of nebulous concepts such as sense of place, good design and safety depend on the specific built environment in a given urban area, and in this way, design guidance should remain generalized. However, some operationalization of these abstract terms is provided in prescriptive theory and policy guidance.

Guidance accompanying UK Planning Policy Guidance Note 3: Housing, on how 'well designed' housing developments should be interpreted, states that a 'safe and secure environment' should be provided, which can be well maintained and is attractive with 'pleasant gardens' (DETR and CABE, 2001, p. 6). Bentley *et al.* argue that the built

environment should be responsive and 'provide its users with an essentially democratic setting' (Bentley *et al.*, 1985, p. 9). For them, such a built environment should include permeability, visual appropriateness, richness in sensory experiences and variety in its range of uses. Other prescriptive theorists argue that high quality places should be well-connected by all forms of transport, and should be 'flexible enough to respond to future changes in use, lifestyle and demography' (Llewelyn-Davies, 2000, p. 14). The cleanliness and maintenance of the built environment and how welcoming it is to all users are also cited as features of high quality by others (Carmona *et al.*, 2004; CABE and DETR, 2000; Blackman *et al.*, 2003; Friedman and Rosenbaum, 2006). It is clear in this broad range of literature on high quality built environments that there is no consensus on which features of the built environment contribute to its high quality or on which features might be more important than others.

1.2 The resurgence of the concept of social cohesion

'Social cohesion' is a term commonly used to describe the social order in a physical or non-physical social setting (Coser, 1977; Forrest and Kearns, 2001; Giddens, 1993; Turok *et al.*, 2004). It is not a new concept; it was discussed by Thomas Hobbes in the seventeenth century when he sought answers to the question: how are men capable of accepting guidance by social norms and goals which make an enduring society possible (Wrong, 1961)? At the end of the nineteenth century, Émile Durkheim, often cited as the founder of sociological thought on social order and cohesion, examined the social regulations adhered to by people in a society and the normless state of *anomie* which prevails when social control breaks down (Coser, 1977; Durkheim, 1952; Giddens, 1978).

In more recent times, social cohesion has been referred to in discussions of the enhancement of economic competitiveness of a city, citizenship in European cities and assimilation and integration of different groups in a society (Hansen, 2003; Penninx *et al.*, 2004; Turok *et al.*, 2004). It has been discussed and referred to without being defined, and elsewhere, defined in different ways (Bollen and Hoyle, 1990; Buckner, 1988; Forrest and Kearns, 2001; Stafford *et al.*, 2003; Jenson, 1998). Nash and Christie argue that cohesion should mean that 'all social groups should feel able to enjoy an area's public life free from attack, abuse or hostility' (2003, p. 39). Other theorists interchangeably refer to social cohesion and social capital (Pierson, 2002) and use 'social capital' to refer to the connections between people and their 'social networks' (Putnam, 2000, p.19), while it is argued elsewhere that social capital and social networks contribute to social cohesion (Forrest and Kearns, 2001). Social cohesion is also argued to include social control, a civic culture and reductions in wealth disparities (Kearns and Forrest, 2000); it is also said to consist of 'politically and socially tolerable divergences [which]...evolve through time'

(Begg, 1995, p. 111). Elsewhere, social cohesion is said to be allied to community cohesion, derived at the societal level from the latter (at the local level) as a bottom-up process (Webster *et al.*, 2004). Policy makers have argued that social cohesion includes a common vision and sense of belonging as well as an equal appreciation of the diversity of people's backgrounds (House of Commons, 2004, p. 7); the same has also be said to constitute community cohesion (Cantle, 2001).

Such variation in definitions of social cohesion is arguably due to approaches to social cohesion which differ according to the culture, period, 'prevailing political ideas', the groups of people concerned, and the methods employed to foster social cohesion (Council of Europe, 2005, p. 23). In the UK, social cohesion has been on the policy agenda since the 1960s when Roy Jenkins defined integration 'not as a flattening process of assimilation but equal opportunity, accompanied by cultural diversity, in an atmosphere of mutual tolerance' (Rose *et al.*, 1969, p. 514). While many theoretical accounts of social cohesion in the UK do not directly address the dimensions of cultural and religious integration, policy has been increasingly shaped around them. This is, in part, most recently due to the 'disturbances' during the summer of 2001 in the northern towns of Bradford, Oldham and Burnley, and the government's response, centred on improving 'community cohesion' in specific areas in the UK (Cantle, 2001; Commission for Racial Equality [CRE], 2002a; Robinson, 2005). There is a second reason for the renewed focus in policy on social cohesion, namely its inclusion in the sustainable communities policy agenda. As well as 'featuring a quality built and natural environment', sustainable communities are defined as 'cohesive with a strong local culture' which encourage 'pride in the community and cohesion within [them]' (ODPM, 2003a, p. 74; 2005a, p. 5). While statements in policy on the inclusion of social cohesion within definitions of sustainable communities are consistent, it is not defined as an individual term in its own right within this conceptual sustainability framework.

Further confusion also arises from the question of whether social cohesion is a desirable outcome that UK policy makers should strive to achieve. It is said in theory and policy that there may be a point at which social cohesion can become too strong, and manifests itself as an inward-looking closed community (Cantle, 2001; Forrest and Kearns, 1999; Mann, 1970). However, it is unclear when too much social cohesion becomes a negative factor and may result in divided neighbourhoods and disparate communities, such as in those who apparently took part in the riots of 2001 (Cantle, 2001). Such prescriptive, yet general, theory and policy on striking the 'right' amount of cohesiveness in a given place or social setting is arguably, in part, due to the theoretical scrutiny to which the associated concepts of 'community' and 'neighbourhood' are subject. A large body of literature discussing good, successful or sustainable communities and

neighbourhoods arguably adheres to the 'community lost' theory, which suggests that modern communities and neighbourhoods no longer have the same sense of community or social engagement commonplace in an unspecified but bygone era, and that attempts should be made to re-capture them (Forrest and Kearns, 2001; Pahl, 1991; Schiefloe, 1990; Wilson, 1985).

1.2.1 The neighbourhood as a setting for social cohesion

While social cohesion is discussed and applied at a broad, societal scale (Council of Europe, 2005; Jenson, 1998; i Ruiz, 2002; Wickham, 2002), it is also considered to be a meaningful concept at the local level, described by Blackman as the 'smallest socio-spatial scale of the societies of which they are part' (Blackman, 2006, p. 2). According to Pahl, it is the local experience of residents, rather than their feelings of national identity or pride, which contributes to the sense of social cohesion in a place (1991). It is this collective experience at the local level which must be understood before social order at the national level can proceed (ibid.). Ferlander and Timms argue that aspects of identification and membership among people in a social setting form part of the concept of social cohesion and relate it closely to 'community' and, as a spatial setting in which communities exist and operate, to 'neighbourhood' (1999). This may be because these latter concepts are value-laden, which is particularly observable when they are both used to describe the places, both geographically and socially, in which people live (Jenks and Dempsey, forthcoming, 2007; Dear and Wolch, 1989; Blackman, 2006).

In the UK, there is a strong focus in national policy on addressing social cohesion which is said to occur within the settings of the community and neighbourhood (ODPM, 2005a; 2005d; Whitehead, 2004). The recently launched Commission on Integration and Cohesion highlights the importance of the neighbourhood as a setting for cohesion, and government initiatives such as the Neighbourhood Strategy for Renewal are applied at the neighbourhood scale (SEU, 2000). Whitehead attributes this interest in the neighbourhood as fundamental to the urban policy of the current British government. He argues that this is two-fold: the government views the neighbourhood as a 'foundational principle of urban regeneration' and as a social setting which 'under-gird[s] a broader set of moral assumptions and practices which are central to the ideologies of central government as a whole' (2004, p. 59). Even though there is a long tradition in theory of considering social cohesion as a concept which occurs in neighbourhoods (Jacobs, 1961; Young and Willmott, 1957; Keller, 1968), it is unclear whether the neighbourhood is an appropriate and valid scale at which to address social cohesion (Amin, 2002).

1.3 The claimed social benefits of high quality built environments

As highlighted in Section 1.1, the main objective behind the creation of high quality built environments is argued to be the design and maintenance of 'places for people' (DETR, 2000b, para. 46; Llewelyn-Davies, 2000; Urban Task Force, 1999). Carmona *et al.* point out that high quality public space is not simply a matter of aesthetic appreciation by a few, select users (2004). Rather, they argue that it has a fundamental impact on how 'all users perceive, function, and socialize in public space' (2004, p. 18). The built environment, including 'the street outside their front door [and] their local neighbourhood', is encountered by people on a daily basis, and the quality of the built environment is therefore argued to make a direct contribution to their everyday lives (Carmona *et al.*, 2004, p. 4; Gehl, 2001; Blackman and Woods, 2004). Claims have been made in policy and policy guidance that high quality built environments influence social activity in a positive way. The ongoing cross-government liveability policy agenda aims not only to improve the quality of the physical environment, but, through such improvements in neighbourhoods, also to improve residents' quality of life (Defra, 2005; Hastings *et al.*, 2005; ODPM, 2005d; also see ODPM, 2003a; SEU, 2001). Research commissioned by CABE shows that, of those surveyed, '85% of people believed that the quality of public space impacts on quality of life and that the quality of the built environment directly impacts on the way they feel' (2002, in Carmona *et al.*, 2004, p. 4). In addition to this, the social benefits of high quality built environments are also cited in government policy which claims that a sustainable community is one which features a 'quality built and natural environment' in 'a community in which [residents]...want to live and work, now and in the future' (ODPM, 2005a, p. 4). Good quality spaces are said to 'foster social inclusion...and citizenship' and 'contribute to social cohesion' (DTLR, 2002, p. 5, p. 77), while a decline in the quality of urban space has been argued to contribute to anti-social behaviour (Lyndhurst, 2004; ODPM, 2002).

There are numerous claims made about the significant influence that the quality of built environments has on specific social activities and behaviour. Research carried out for CABE Space found that, for a sample of 1500 people, the most important contribution good parks and public spaces make is to provide a sense of community, as well as providing people with places to meet and socialize (2004, p. 5). Elsewhere, it is argued that particular elements of quality of the built environment, such as the level of maintenance, have a significant impact on residents' sense of community and social interaction (Farrell *et al.*, 2004). Successful places which have their own character are claimed to contribute to residents' sense of place and sense of pride in an area (CABE and Home Builders Federation [HBF], 2005). It is also argued that good parks and

attractive open spaces 'foster[ing] neighbourhood pride and community cohesion' (ODPM, 2002, p. 36). The Housing Corporation, which is committed to providing 'good quality housing in attractive, safe, clean environments' (2003, in Burton and Mitchell, 2006), which can be attributed to the policy arguments that housing development is not simply about bricks and mortar, but rather is about the creation of cohesive mixed communities supported by good quality environments (CABE, 2004; Hill, 2004).

It is therefore clear that high quality built environments are consistently argued to have an effect on the social cohesion, and associated social activities and behaviours, in urban settings. However, there is no empirical evidence to support such claims. The lack of empirical evidence or consensus on definitions of both concepts leads to a lack of clarity for theorists and practitioners, and, fundamentally, calls into question the validity of the assertions made that high quality built environments positively influence the social cohesion that occurs in a place. This thesis will contribute to knowledge by assessing the effect, if any, that features of high quality built environments are purported to have on social cohesion.

1.4 The research aims

The previous sections have established that the quality of the built environment is cited in theory and UK policy as having a positive association with social cohesion. It has also been highlighted that both concepts are considered to be significant at the neighbourhood level, in policy as well as theory and practice. The overall aim of the research is therefore as follows:

- **To determine the relationship, if any, between the features that constitute a high quality built environment and social cohesion in English neighbourhoods.**

The quality of the built environment is discussed extensively in theory, policy and practice and has been for considerable time. There is a large number of descriptions of high quality built environments in theory and policy, arising from observations of successful built environments (Aldous, 1992), guidance on the urban design process (Llewelyn-Davies, 2000) and advice accompanying policy guidance on high quality residential developments (DETR and CABE, 2001; Williams *et al.*, 2000a). However, there is no consensus on how the quality of the built environment is defined nor on which features of the built environment can be considered to be of high quality. Stafford *et al.* measure factors such as air quality, refuse collections and public sector housing vacancy rates in

their examination of the associations between health and the neighbourhood environment (2005), while Molinari *et al.* include solid waste disposal, and pesticide use and control (1998) in a related study. Other research considers a successful place as physically and visually integrated with its surroundings and one which strikes a balance between the natural and man-made environments (Llewelyn-Davies, 2000; CABE and DETR, 2000); and elsewhere it is described as comfortable, accessible and diverse (Jacobs, 1993; Blackman *et al.*, 2003; Burton and Mitchell, 2006).

In some cases, existing empirical evidence does not explicitly define quality of the built environment in undertaking research or reporting its results (CABE Space, 2004; Central London Partnership, 2003; Cole and Shayer, 1998; Groves *et al.*, 2003). This makes it difficult to ascertain whether the researchers and those taking part in the research defined quality in the same way. Other research examines a particular aspect (or more) of quality of the built environment, rather than 'quality' as an holistic concept (Carmona *et al.*, 2001; Shaftoe, 2000). And while it can be argued that quality is too subjective a concept to apply across a range of built environments or urban areas, this is precisely what theorists, practitioners and policy-makers engage in (Green, 1999).

It is clear that there are a large number of different interpretations provided of 'high quality', but a disproportionately small amount of empirical evidence which examines the effects of the concept in practice. There is therefore a need to examine the concept holistically as a practical proposition for neighbourhoods, but also to provide guidance for urban policies which promote high quality built environments. Therefore, the second aim of this research is:

- **To determine the features considered to constitute high quality in the built environment.**

The concept of social cohesion is also subject to a lack of consensus on its definition when used in theory and policy, as Section 1.2 outlined. It has been described as incorporating aspects, among a number of others, such as shared values, challenges and equal opportunity (Government of Canada, 1996, in Cantle, 2001), a degree of attraction to live and remain in a neighbourhood (Buckner, 1988) and strong and positive relationships are being developed between people from different backgrounds (House of Commons, 2004). Nor is there consensus on the scale at which social cohesion should be applied and examined, which has been suggested to be a relevant concept internationally, nationally through to local communities and small groups (Council of Europe, 2005; Mullings, 1981; Giddens, 1993). Furthermore, there is little empirical evidence which examines social cohesion as an holistic concept, even though there is existing research

which examines particular social behaviours and activities which are closely related to social cohesion (Fischer *et al.*, 1977; Baumgartner, 1988; Henning and Lieberg, 1996). It therefore follows that the third aim of this research is:

- **To establish a definition of social cohesion for the purposes of this research.**

To achieve the overall aim of the research, to determine the relationship, if any, between the features that constitute a high quality built environment and social cohesion in English neighbourhoods, three further research aims are:

- **To establish if there is a relationship in English neighbourhoods between features that constitute high quality in the built environment and social cohesion.**
- **To investigate the nature and extent of the relationship, if it exists.**
- **To identify the features of high quality in the built environment in England that are most likely to support social cohesion in its neighbourhoods.**

To achieve these aims, gaps in existing research will be targeted to support or refute the claims that particular features which constitute high quality in the built environment support social cohesion. Furthermore, this research will provide empirical evidence of the relationship, if it exists, between these two concepts and shed light on its nature. A critical evaluation will be conducted of the features of high quality in the built environment and the effects they are found to have on social cohesion. This will form empirical evidence about which features of high quality in the built environment are most likely to support social cohesion in English neighbourhoods. This, in turn, could inform policymakers and practitioners by highlighting those features of the built environment which best support social cohesion in neighbourhoods.

1.5 The research approach

To provide the most suitable set of methods and analyses to achieve the research aims, a multifaceted methodological approach is adopted for this research. A detailed literature review presents those features considered to constitute a high quality built environment, and a definition of social cohesion for the purposes of this research. To achieve the research aims listed above, it is necessary to conduct an empirical investigation to address the gap in knowledge relating to the quality of the built environment and its purported relationship with social cohesion. This is judged to be the most appropriate methodological approach because definitions of the concepts under scrutiny, which will be

established according to existing theoretical sources, have not been used before to inform empirical research. A cross-sectional rather than an experimental or longitudinal design was adopted and a combination of qualitative and quantitative methods was used in this research due to its widespread use in the social sciences as a method of collecting rich data as well as triangulating that data (Bryman, 2001; Deacon *et al.*, 1998; Goodchild and Cole, 2001). The use of more than one data source to triangulate data is argued to provide a more complete picture of reality (Berg, 2004; Miles and Huberman, 1994).

To measure quality of the built environment and social cohesion, the concepts were operationalized and developed as indicators. Indicators are well-used in social sciences and built environment research and allow the researcher to make assessments using representative information in a consistent manner (Bryman, 2001). As a number of the indicators measured the concepts at the neighbourhood level, or called on perceived experiences of the neighbourhood, residents were identified for the research based on the selection of six English neighbourhoods and a subsequent random sample of the residing populations. A new and objective method of neighbourhood selection was adopted and employed one criterion: the urban area selected can be considered a physically defined neighbourhood.

The type of data collection and analysis methods used can be described primarily as quantitative, although there is also a significant qualitative element. The use of quantitative data permits the research to contribute to the small body of empirical evidence is slowly being developed in relation to the measurement of the quality of the built environment; however this is new, ongoing and, to a certain extent, part of an iterative process (for examples see Mulgan *et al.*, 2006; ODPM, 2005e, pp. 5-6). It is therefore important for this research to be useful to both policy and practice, and quantitative methods are commonly employed to allow empirical results to be generalized through a representative sample of the population in question (Hinton, 2004). It can be argued that a shortcoming of a quantitative methodological approach is a lack of depth in the research data (Burton, 1997; after Pole and Lampard, 2002). For this reason, as well as the nature of the wider concepts that the data is measuring, qualitative methods of data collection and analysis are also included. As the indicators employed in this research may be used in further research, as well as the neighbourhood selection process, methodological tools as well as findings relating to the relationship between quality of the built environment and social cohesion are provided.

1.6 Thesis structure

This thesis is organized in nine chapters. Following this introductory chapter, Chapters Two and Three form the literature review which is the foundation for this research. Chapter Two provides an examination of the concept of quality of the built environment. Using a theoretical framework based on three 'traditions of thought', theory, practice and policy are examined, and the discussion focuses on those features claimed to contribute to a high quality built environment. As there is no consensus as to what constitutes that high quality, the literature review will bring to light those features that theorists, practitioners and policy-makers claim to make up a high quality built environment. This chapter addresses the research aim focused on determining the features considered to constitute high quality in the built environment.

Chapter Three addresses the next research aim by establishing a definition of social cohesion for the purposes of this research. It examines the concept of social cohesion and its recent revival in UK policy, which is due to its adoption in the sustainable communities programme as well as the government's focus on immigration, brought about, in part, by the riots in a number of northern towns in 2001. The chapter outlines the theoretical interpretations of social cohesion and its conceptual proximity to concepts such as social capital, social order and integration. The chapter concludes with a definition of social cohesion and identifies those dimensions of social activity claimed to make up social cohesion.

Chapter Four consists of a discussion of the research methodology, outlining how the empirical research is to be carried out. The method of operationalization of measuring both the features of quality of the built environment and social cohesion is clarified through the use of indicators. The methods by which the data is collected are highlighted in this chapter and the reasons for selecting a multivariate investigation employing a combination of quantitative and qualitative methods of data collection and analysis are presented.

Chapter Five provides a discussion of the indicators used in the research. These indicators measure the features of quality of the built environment and social cohesion, as well as intervening indicators such as the age, gender and economic status of the sample. A number of indicators are employed to measure each feature of quality of the built environment and each dimension of social cohesion. A number of analyses are carried out with individual variables also used in combination to represent a particular feature of quality or a dimension of social cohesion.

Chapter Six details the characteristics of the sample under scrutiny and the neighbourhoods in which they live. This is done systematically by building up a picture of the neighbourhoods in terms of their general characteristics, including size, layout,

housing type and transport infrastructure. Data is provided about the characteristics of the population using Census data, and about the random sample from the household questionnaire survey used in this research. Descriptive findings provide a broad overview of the sample and the characteristics of where they live according to the scale of the indicator used to measure them. The data presented in this chapter therefore is relevant at the neighbourhood, the street, the household and the individual respondent level.

Chapter Seven is the primary analysis chapter. This chapter addresses two of the research aims: it establishes if there is a relationship in English neighbourhoods between features that constitute high quality in the built environment and social cohesion, and, if there is, the nature and extent of the relationship is investigated. The chapter presents the data and identifies evidence of an association between the features of quality of the built environment and each dimension of social cohesion. The analysis is based on the samples of both the household questionnaire survey and the semi-structured interviews, and the overall associations found between them and the features of quality of the built environment, across the neighbourhoods. The nature of the association, if any, is also determined through the analysis, in terms of whether the features of quality of the built environment have positive or negative effects on social cohesion. The significance of the association that features of quality of the built environment have with individual dimensions of social cohesion is also examined with the influence of intervening variables taken into account.

Chapter Eight discusses the findings of the analysis chapter and addresses the final research aim of identifying the features of high quality in the built environment in England that are most likely to support social cohesion in its neighbourhoods. Each feature of quality is examined, and the strength of the association it may have with dimensions of social cohesion is ascertained. This then provides evidence of the potential for each feature of quality of the built environment to support dimensions of social cohesion.

The final chapter, Chapter Nine, provides the conclusion to the thesis. Having established in the two previous chapters the relationships, if any, between the features that constitute a high quality built environment and social cohesion, this chapter examines the contribution that this research makes to theory. In addition to this, the implications of the research findings for policy and practice in the UK are set out and considered. Finally, the chapter poses the question of whether or not the pursuit of social cohesion in neighbourhoods is a worthwhile goal.

Chapter Two

Features of High Quality Built Environments

Chapter Two – Features of High Quality Built Environments

2.1 Introduction

The main aims of this chapter are to examine the concept of 'high quality' in the built environment and to provide a definition of a high quality built environment; these form the basis for an empirical investigation. After highlighting some of the difficulties inherent in examining definitions of quality, the relevant literature is examined through a discussion broadly led by recent thinking which has identified three schools of thought or traditions which are argued to occur in the design of built environments: 'visual-artistic', 'social-usage' and 'making places' (Carmona *et al.*, 2003, pp. 6-7). These 'traditions of thought' provide a broad theoretical framework within which to examine theory, practice and policy; they separate the different arguments for providing features of a high quality built environment and the effects these are claimed to produce. The third tradition, that of 'making places' which is argued to be current today, is antecedent to a paradigm shift towards the achievement of sustainability as a principal objective in urban design and planning. Much of the more recent literature discussing high quality built environments is therefore situated within the current paradigm of sustainability.

2.2 'Quality' and 'characteristic'

Examining a concept such as 'high quality' raises questions of how to deal with its inherent subjectivity. In addition, the interchanging in literature of the terms 'quality' and 'characteristic' as well as those of 'quality' and 'high quality' poses a semantic challenge: how to decipher accurately the intentions of the author. The term 'quality' itself is somewhat problematic; two definitions exist in common parlance. The Concise Oxford English Dictionary defines quality firstly as 'general excellence', and secondly as 'a distinctive attribute or characteristic' (2005, p. 1170). The latter definition is not adopted in this thesis because it is restricted simply to describing characteristics, whereas this research involves the distinction between 'low' and 'high' quality. The former definition, 'general excellence', does not, however, take into account that 'quality' tends to be used as a comparative term in everyday language. Today, 'general excellence' does not differ in meaning from 'high quality'; this arguably calls into question the use of terms such as 'poor' or 'low' quality, perhaps rendering them oxymoronic. The New Shorter Oxford English Dictionary states that the use and meaning of the term 'quality' now refers to the 'relative nature or standard of something; the degree of excellence...possessed by a thing'

(1993, p. 2438). It is the latter part of this definition, 'the degree of excellence', that forms the basis for establishing what constitutes high quality in the built environment.

2.3 Subjectivity

An important dimension of any discussion of quality is that it is by definition a subjective estimation bestowed on a good or service. This subjective value is inherently intangible; it is wholly dependent on the opinion and attitudes of the beholder. 'High quality' depends on the perceptions of the designer, the critic and the user to determine the degree of quality or excellence that something has. It cannot be assumed that each user of a building, neighbourhood, town or city has the same attitudes towards, and requirements of, the built environment. Their perceptions and reactions may be affected by other influences such as age, gender, income level, occupation, cultural background and religion. The issue of subjectivity arises at different stages in this research. To address the subjectivity involved in arriving at a definition of high quality, common features agreed upon by theorists in their definitions of (features of) a high quality built environment are selected. These features will be operationalized as objective indicators of the quality of the built environment. Where subjectivity arises elsewhere, it is dealt with in the relevant chapter.

2.4 The need for high quality built environments

Theorists and practitioners have long advocated high quality built environments in which people should live and work. According to Cowan, 'there was much agonizing about the miserable quality of urban environments' as a result of the industrial epoch in Britain over one hundred years ago (1997, p. 11). In the nineteenth century, the population increased dramatically and 'new social trends...raised housing expectations and produced a climate of opinion in which...housing evils came to be regarded as unacceptable' (Burnett, 1978, p. 3; Engels, 1845 [1987]). Documents such as the *Report on the Sanitary Condition of the Labouring Population of Great Britain* by Edwin Chadwick in 1842 directed public attention to the poor public health conditions in working class areas where overcrowding, disease, poverty and crime were rife (Chadwick, 1842 [1965]; Godwin, 1859 [1972]; Burnett, 1978). At the heart of the concepts of the utopian communities and model villages of the nineteenth and twentieth centuries was the ideal of provision of a high quality, and healthy, built environment: Ebenezer Howard's 'Garden City' gave extensive access to clean air and green, open space, while villages created by Victorian philanthropists such as Joseph Rowntree and Titus Salt were based on providing clean and safe living environments away from cities which were believed to be detrimental to people's health

and well-being (Cowan, 1997; Howard, 1898; Miller, 1992). Concepts such as the garden city and model towns informed the Tudor Walters report of 1918, whose objective was to 'profoundly influence the general standard of housing' and provide minimum standards for air, light and living space (Burnett, 1978; Local Government Board, 1918). However this, and other government guidance which followed, may have translated into practice, for over a century a plethora of publications of a prescriptive and recommendatory nature has been published, extolling the virtues of providing a high quality built environment for residents, workers and visitors (Alexander *et al.*, 1977; Cullen, 1961; Howard, 1898; Jacobs, 1961; Unwin, 1906, in Miller, 1992; Urban Task Force, 1999).

2.5 Criteria for defining high quality built environments

To achieve the main aim of this chapter of providing a definition of a high quality built environment, certain criteria were followed. Firstly, features[1], or elements, of the built environment were selected where consensus in theory and policy guidance prevailed as to its validity as a feature of quality. This process was a manner of 'face validity' to ensure that, according to (prescriptive) theorists, the features selected are considered to represent a particular aspect of quality (after Bryman, 2001). Secondly, the research identifies features which are relevant at particular scales. In the main, these scales are the neighbourhood and the street. It is outside the scope of this research to examine individual buildings and some features of quality of the built environment were omitted because it was not possible to measure them at these scales. Thirdly, it was necessary for the features identified in the research to be measurable and operationalized into indicators. The final criterion was that the features were relevant to policy-making, so that implications of the findings and analyses directly addressed the focus put on the quality of the built environment in national policy.

To navigate a way through the numerous sources which discuss 'high quality', 'good quality', 'low quality' and various associated terms in theory, prescriptive theory and policy, a recent method of examining and understanding urban design and planning theory was adopted. Carmona *et al.* identify three traditions of thought which loosely chart the sequential and conceptual process of theoretical development of urban design and planning theory over the last century or so (after Carmona *et al.*, 2003; Jarvis, 1980). The traditions are the following:

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[1] The term 'feature' is employed to describe the contributory components making up the definition of a high quality built environment. It is however acknowledged that, in some cases, terms such as 'element', 'objective' or even 'characteristic' might be more appropriate, as the 'feature' in question is not tangible or physical. Where this is the case, terms may be interchanged.

- the 'artistic tradition': where emphasis is on the visible form of the built environment (Jarvis, 1980, p. 50)
- the 'social usage tradition': where concern is with 'the public use and experience of urban environments' (ibid.)
- the 'making places tradition': where spaces become places because of the support the urban environment provides for the range of activities that take place there (Carmona *et al.*, 2003, p. 7)

2.6 The 'visual-artistic' tradition

Carmona *et al.* argue that theorists and practitioners following the 'visual-artistic' tradition concentrated on 'the visual qualities and aesthetic experience of urban spaces' above all others (2003, p. 6). In the late nineteenth century, Camillo Sitte, a recognized proponent of this tradition, claimed that the organization of space should follow artistic principles and focus on the visual experience of urban spaces (Jarvis, 1980, p. 51; Harvey, 1990). He argued that 'only that which a spectator can hold in view, what can be seen, is of artistic importance'; that it is 'the position of the spectator and the direction in which he is looking' that counts above all (Sitte, 1889 [1986], pp. 229-230; p. 177). Sitte's views influenced twentieth century planners and architects, particularly Raymond Unwin, and later, Gordon Cullen. Unwin, who with fellow architect and planner Barry Parker designed Letchworth Garden City and Hampstead Garden suburb, believed that a visually attractive built environment was entirely possible: 'It is the lack of beauty of the amenities of life, more than anything else, which obliges us to admit that our work of town building in the past century has not been well done' (Unwin, 1909 [1994], p. 4). From the early twentieth century to the period after the Second World War in Britain, design and advice focused on the appearance and layout of the built environment: little consideration was given to the requirements of those living there (Jarvis, 1980, p. 53), despite new design and planning concepts being heavily influenced by health problems claimed to be associated with the city. Referring to lists of abstract priorities used by Patrick Geddes and in English Town Planning Acts of the time, the planner Patrick Abercrombie, in 1933, commented that 'there can be little doubt that beauty should stand first [in his list of Beauty, Health and Convenience] as it is the quality which must run through the whole in order to lift sanitation and engineering to the level of civic design and the dignity of city life' (Abercrombie, 1933 [1998], p. 104). This preoccupation with the visual quality of the built environment also prevailed in the USA through the short-lived but influential City Beautiful movement. One of its principal exponents, Daniel Burnham, supported Abercrombie in his elevation of 'beauty' above all things in urban planning, illustrated in his plan for Chicago which was 'to

restore to the city a lost visual and aesthetic harmony, thereby creating the physical prerequisite for the emergence of a harmonious social order' (Boyer, 1978, cited in Hall, 2002a, pp. 192-3). Modernism also followed the 'visual-artistic' tradition: Le Corbusier argued for the 'imperative need to satisfy functional requirements through empirical form [and] the impulse to use abstract elements to affect the senses and nourish the intellect' (Frampton, 1992, p. 152). He argued that engineers and architects employ geometrical forms which satisfy the eyes, create good art through mathematical harmony, which is a cause of beauty (Jencks, 1973; Le Corbusier, 1931 [1986]). The (redefined) aim of the *Congrès Internationaux d'Architecture Moderne* (CIAM) was 'the creation of a physical environment that will satisfy man's emotional and material needs and stimulate his spiritual growth' (Gold, 1997, p. 203). In the UK in the 1960s, architect Gordon Cullen offered influential prescriptive advice to planners in *Townscape*, arguing that a successful town must be designed with people's visual experience in mind because 'it is almost entirely through vision that the environment is apprehended' (1961, p. 10). The proponents of the 'visual-artistic' tradition argued for certain features of the environment, said to constitute high quality.

2.6.1 'Visual-artistic': features of high quality in the built environment

The main features of high quality in the built environment according to theorists and practitioners within the 'visual-artistic' tradition tend to fall into three categories[2]:

- Attractiveness
- Visual complexity
- Character

2.6.1.1 Attractiveness

The legacy of architects and planners of the late nineteenth and early twentieth centuries can be seen in the continued importance that aesthetic and visual attractiveness hold for today's planners and urban designers (e.g. Barton *et al.*, 2003; Carmona *et al.*, 2001; 2004; Department of the Environment Transport and the Regions [DETR], 2000a; Llewelyn-Davies, 2000). However, it is unclear what exactly the terms actually mean; the term 'attractiveness' for instance is often not defined (e.g. Aldous, 1992; Commission for Architecture and the Built Environment [CABE] and DETR, 2002; Department of the

[2] While the architectural and aesthetic design of buildings is considered to be an element of high quality built environments by theorists within the 'visual-artistic' tradition, it is outside the scope here for examination as the scale of this research is the neighbourhood rather than individual buildings.

Environment [DoE], 1972; Jacobs, 1993; Rapoport, 1977; Reynolds *et al.*, 1974). Even where it is, as by Carmona *et al.* as 'visually pleasing' (Carmona *et al.*, 2004, p. 19), the definition is still dependent on subjective opinions. What might be pleasing to one person may not be to the next; there seems to be an underlying assumption in theory and policy that a term such as 'attractive' is understandable to all and needs no definition. Within the 'visual-artistic' tradition, there is a lack of agreement as to what attractiveness refers in the built environment. It is argued by some that a place is most often described as attractive because of its greenery and trees (Abercrombie, 1998 (1933); Howard, 1898; DETR, 1999) while others broadly relate it to the design of buildings and public spaces, the view or vista and the landscape (Cullen, 1961; DoE, 1972; Sitte, 1889 [1986]). Despite this lack of agreement on definition, apparent social benefits of an attractive built environment are frequently cited in the 'visual-artistic' tradition. Attractiveness is claimed to be a precursor to a better quality of life and to residents' satisfaction with an area as well as contributing to a sense of place, place identity and a feeling of belonging for people living there and using the built environment (Cullen, 1961; Howard, 1898; Rapoport, 1977; Reynolds *et al.*, 1974; Sitte, 1986 (1889); Taylor, 1998; Abercrombie, 1933 [1998]). However, these claims in the main were not based on empirical evidence. Attractiveness is also discussed in the context of the 'making places' tradition in Section 2.10.9.

2.6.1.2 Visual complexity

Visual complexity is a feature of a high quality built environment according to Gordon Cullen in *Townscape* (1961). He values both the optical experience of the built environment and its content for the essential complexity they can possess: he states that there should be sudden visual contrasts 'so an impact is made on the eye, bringing the plan to life' (p. 17). Cullen favourably cites examples such as level changes, (p. 38), grandiose vistas (p. 38), pattern and function changes or punctuation (p. 45) and fluctuations in space layout as having 'a direct impact on the emotions' (p. 46). However, there is little consensus as to what those contrasts should be and how they should be defined. In a review of literature focusing on important components of environmental quality, Rapoport finds a considerable number of favourable references to 'variety' and 'richness' as opposed to 'monotony' and 'uniformity', (e.g. Appleyard and Lintell, 1972; Willmott, 1963, both cited in Rapoport, 1977). It is not clear how such variety and richness might relate to visual complexity. He also finds specific references to visual complexity but with little or no detail about how that complexity is composed (e.g. Rapoport, 1977; Reynolds *et al.*, 1974). There is also no consensus about how much complexity is necessary. Allan Jacobs concurs in *Great Streets*, that visual complexity is required;

however he notes that too much complexity results in chaos (Jacobs, 1993, p. 282). Rapoport discusses 'perceptual complexity' and identifies numerous ways in which it can be achieved, including, for example, a variety of tactile paving and light and shade (1972, p. 147). Moughtin *et al.* argue that decoration and ornamentation, discussed elsewhere as features of visual complexity (Alexander *et al.*, 1977; Rapoport, 1982), actually contribute to 'visual order or unity' (1999, p. 3). Kevin Lynch cites both visual complexity and simplicity as important features in his work on the perceived legibility of the urban environment (Lynch, 1960, pp. 105-8). There is no evidence linking the benefits of visual complexity to the macro scale of the neighbourhood: many theoretical examples of visual complexity apply to different scales of the urban form – including a much finer grain such as the individual building, in the case of ornamentation, or to the street and the physical urban fabric, with reference to the relationships between buildings and space (Cullen, 1961; Moughtin *et al.*, 1999; Rapoport, 1972). This research does not examine the urban form at this level of detail.

2.6.1.3 Character

Finally, the principal feature of high quality in the built environment, as discussed in theories within the 'visual-artistic' tradition, is a sense of place. This is also discussed by theorists and practitioners within the other schools of thought which shows its continuing significance. The perceived visual experience of the built environment can be said to have a direct influence on people's sense of a particular place (Cullen, 1961) for example in making them feel safe and at ease (Jarvis, 1980; Sitte, 1889 [1986]). It is also said to contribute to the preservation of the local character of a place (Abercrombie, 1933 [1998]), in the inescapable creation of both a 'here' and a 'there' (Cullen, 1961, p. 11). Conformity with the local architectural styles and materials is cited as a design feature which reflects and enhances the character of a place (CABE and DETR, 2000; Cullen, 1961; DETR, 2000b). To ascertain what gives that sense of place or character is notoriously difficult, in part because of the importance of the local context. However, it is a consistently cited feature of a high quality built environment throughout the traditions, as shown in the following sections.

2.7 The shift from the 'visual-artistic' to the 'social-usage' tradition of thought

An explanation for adherence to the 'visual-artistic' tradition by built environment theorists might be provided by formalist theory which argues that all art produces an emotion in the viewer which is the same for each person; this is known as the aesthetic emotion (Bell,

1949; Sheppard, 1987). Formalist theory argues that the common factor to all art which invokes the aesthetic emotion is form: it is significant form by which art, and here, the built environment, is visually appreciated by all viewers (Taylor, 1998). The fluctuating focus on the aesthetic, the beautiful and the attractive by built environment practitioners from the late nineteenth-century to today was initially, in part, a reaction to the perceived negative visual appearance that industrialization created in the late nineteenth and early twentieth centuries (e.g. Smith Morris, 1997; Unwin, 1909 [1994]). Criticism of such aesthetic-heavy urban planning and design was widespread in the years after World War I, particularly among those adhering to the 'city practical' tradition (Wilson, 1989, p. 3, p. 278). Other issues were highlighted as more important than aesthetic considerations in the built environment. For Joseph Rowntree, who supported Unwin's (as well as Ebenezer Howard's) planning ideas, the provision of clean 'wholesome living conditions' for the working classes was central to his philosophy of tackling the cause of social problems (Miller, 1992). Even Unwin himself conceded that the 'irreducible minimum' of the Garden City was the provision of 'a decent home and garden for every family', although he did add that to 'succeed utterly...a beautiful home in a beautiful garden and a beautiful city for all' should be provided (Unwin, 1906, p.111, cited in Miller, 1992). It is not the case that the 'visual-artistic' tradition was no longer followed when the 'social-usage' tradition became prominent: the former school of thought continues today in architectural and urban design (Sarfatti Larson, 1993). The 'visual-artistic' tradition was therefore not replaced, but it was regarded by theorists and policy-makers as less important than the provision of an urban environment for all who use it and perceive it (Carmona et al, 2003, p. 7).

2.8 The 'social-usage' tradition

Principal advocates of the 'social-usage' school of thought came to prominence in the 1960s and continued through to the 1980s (Alexander *et al.*, 1977; Gehl, 1971; Jacobs, 1961; Lynch, 1960; Whyte, 1980). Their works follow on from the 'visual-artistic' tradition in the way that they broadly relate not simply to the optical but to overall perceptions of the environment and the sense of place, with specific focus on how 'people use and colonize space' (Carmona *et al.*, 2003, pp. 6-7). The works by the planning scholar, Lewis Mumford, were a precursor to the social-usage tradition, but were not supported by later proponents (Jacobs, 1961). In 1938, he stated that 'social facts are primary, and the physical organization of a city, its industries and its markets, its lines of communication and traffic, must be subservient to its social needs' (Mumford, 1938, p. 482). Understanding the relationship between the built environment and the needs of people who live there is a dominant thread in 'social-usage' theory.

Kevin Lynch's *The Image of the City* is an important text, illustrating the transition from a tradition of thought dominantly 'visual-artistic' to one which was principally 'social-usage' through its focus on one, aesthetically-led aspect of the built environment – its visual content – and the broader range of associated meanings it gains according to the user's perception (1960, p. 4). In Lynch's own words: 'Nothing is experienced by itself, but always in relation to its surroundings...Every citizen has had long associations with some part of his city, and his image is soaked in memories and meanings' (p. 1). Those meanings can range from feelings of emotional security and an ability to move about easily and safely in the city, to 'a broad frame of reference' providing choices for users of the city (ibid., p. 4). Other supporters of the 'social-usage' tradition looked at the broader characteristics of the built environment and the subsequent wider context of effects on behaviour and user requirements. Jane Jacobs highlights the importance of the 'intricate, many-faceted, cultural life of the metropolis' which she believed theorists adhering to the 'visual-artistic' tradition 'wrote off' to the detriment of subsequent urban planning (Jacobs, 1961, p. 19). According to Jacobs, the design of the city must account for mundane yet necessary factors of everyday city life, including policing, knowledge exchange, political operation and economic development (ibid.). Her arguments centre on the importance of the built environment and its influence over social life in the city and vice versa. Features such as pavements, parks and neighbourhoods were all cited as significant settings for social interaction, social contact and feelings of safety (Caplow *et al.*, 1964; Fischer, 1976; Jacobs, 1961; Keller, 1968) and continue to be so today.

In the late 1970s, Christopher Alexander published three works which focused on supporting people's everyday needs, which he operationalized as tendencies (Alexander and Poyner, 1970) in the form of patterns, or relations, defined by the built environment (Alexander, 1979; 1977; 1975). Through the identification of tendencies (such as being asleep, working in a particular place, shopping for food) as things 'which people are trying to do...whenever they get the chance', he argued that the built environment 'must make sure they get this chance' (Alexander and Poyner, 1970, p. 311). Developing the idea that the built environment has a directional relationship with the social life it supports (also see Appleyard and Lintell, 1972; Bentley *et al.*, 1985; Whyte, 1980), Jan Gehl argues that places become meaningful due to the activity that takes place and is supported in them (1971). He illustrates this through his claim that where the urban environment is of a poor quality, recreational, or optional, and social activities disappear; they are particularly dependent on favourable conditions (Gehl, 1971, p. 35).

2.8.1 'Social-usage': features of high quality in the built environment

The principal features of high quality in the built environment emerging from literature within the 'social-usage' tradition tend to fall into six categories listed below. These features arguably reflect the importance that the support of everyday life and the experience of the urban environment by its users are given by advocates of the 'social-usage' tradition. These features are seen to be interconnected by some theorists, indicating that built environments require all of these features to be considered high quality (Bentley *et al.*, 1985).

- Perceived and physical safety
- Comfort
- Connectedness and permeability
- Legibility
- Mixed land uses
- Character

2.8.1.1 Perceived and physical safety

Literature pertaining to the relationship between the built environment and people's social lives often focuses on safety (Barton, 2000a; Crouch *et al.*, 1999; Engwicht, 1992; Jacobs, 1993; Jacobs, 1961; Rapoport, 1977; Shaftoe, 2000). It is frequently said that a high quality built environment is one in which people feel safe (Carmona *et al.*, 2001; 2003; Jacobs, 1993; Llewelyn-Davies, 2000; ODPM, 2005a) This perception of resultant safety is one of the least contested benefits the built environment is said to provide: where consensus does not occur is on how the physical form contributes to such feelings. Jane Jacobs argues that having legitimate 'eyes upon the street', brought about through, for example, the urban layout and a mix of land uses, can play an important part in producing feelings of safety for residents and users of the street: 'a well-used city street is apt to be a safe street' (Jacobs, 1961, p. 44). As well as 'curious eyes' (Engwicht, 1992, p. 56), Oscar Newman identifies the physical layout of residential areas and building height and housing form as important physical features contributing to feelings of safety in the neighbourhood and low crime levels (1972; 1996, p. 1, pp. 24-5). Aspects of Newman's *defensible space* model – where residential environments are restructured to inhibit crime and allow residents to control the areas around their homes - have however been criticized as preventing the movement of all people in an area, not just criminals (Carmona *et al.*, 2003; Hillier, 1973). An example of this can be seen in the recent establishment of gated communities in the UK, despite conflicting research into the claimed levels of safety for

the wider community, in particular for those living outside the closed gates (Bentley, 1999, p. 163, cited in Carmona *et al.*, 2003, p. 119; Manzi and Smith-Bowers, 2005; Shaftoe, 2000). While there is little agreement about how a built environment should or can be designed to be safe, there is widespread consensus that safety is an essential feature of high quality built environments. This is discussed as part of the 'making places' tradition in section 2.10.7.

2.8.1.2 Comfort

A feature of a high quality built environment frequently cited in the literature is comfort. Allan Jacobs states that the 'best streets' are physically comfortable, with no sense of confinement (1993, p. 9). However, he offers no clue as to what makes the built environment comfortable. Likewise, Carmona *et al.* (2004) who cite survey results carried out for the BBC and CABE offer no definition of the comfort provided by the 'best' streets, nor its lack in the 'worst' streets (p. 25). According to Whyte, one of the key qualities of a successful public space is that it is comfortable (2000, in Pasaogullari and Doratli, 2004); CABE and DETR identify a set of 'qualities' for public spaces, distinguishing them as comfortable (to spend time in) (2000, in Carmona *et al.*, 2004, p. 19), but not identifying what makes them comfortable.

Guidance, however, is offered in defining comfort, with varying detail. Research conducted by Whyte found that public places need to be socially comfortable, providing choices for users such as seating in the sun and shade, as well as choices for groups and lone users (Whyte, 1980, p. 28). Alexander *et al.*, on the other hand, do not elaborate on what is meant by comfort, stating that 'the layout of paths will seem right and comfortable only when it is compatible with the process of walking' (1977, p. 585-8); nor do they acknowledge that the experience of walking is very different for different groups, such as older people with dementia (Burton and Mitchell, 2006, pp. 92-103). Aspects of comfort are discussed further in Section 2.10.5.

2.8.1.3 Connectedness and permeability

'Ease of movement' for pedestrians within a place, along with the way in which different places are connected to each other, are cited in current government policy statements as features of high quality built environments (CABE and DETR, 2000, p. 15; DETR, 2001; ODPM, 2005a). Permeability has been defined as 'the degree to which an area has a variety of pleasant, convenient and safe routes through it' (CABE and DETR, 2000, p. 91), and relates to how the configuration of the urban form controls access and movement for pedestrians (Hillier and Hanson, 1984). Connectedness relates to how the routes in such

an area are serviced by a pedestrian network (Baxter and Associates, 1998). According to the Urban Task Force, the successful urban environment 'operates as a series of interconnected networks of places and spaces devoted to making the most of human interaction" (1999, p. 41). For Cowan, '[h]ow lively a particular square, street or other space [is]...will depend as much on what routes pass through it as on what happens in or beside it' (Cowan, 1997, p.9). This sentiment is echoed by Gehl in his research into the social activities that take place in public spaces. He argues that a route which is well-connected for the pedestrian is theoretically a well-used one, and, is the route people choose to use instead of deserted or quiet routes (2001; Gehl *et al.*, 2004); perhaps because of increased feelings of safety. A well-connected built environment is also a permeable one, with small block sizes often cited as a physical manifestation (Aldous, 1992; Bentley *et al.*, 1985; Jacobs, 1961). Small block sizes give pedestrians more route alternatives than large blocks and also offer better visual permeability, contributing to the ease with which people can get around (Bentley *et al.*, 1985, p. 12; Carmona *et al.*, 2003; Jacobs, 1961). Aldous states that small blocks are crucial for 'people on foot [who] must be able to take a short, direct route through or between buildings, [and] not be blocked by long, unbroken building frontages' (1992, p. 28). Furthermore, urban layouts such as culs-de-sac which hinder pedestrian movement within neighbourhoods, are frequently cited as having detrimental effects and negative social implications (Barton, 2000b; Burton and Mitchell, 2006). Little guidance is provided on how small a 'small urban block' actually is: Burton and Mitchell advise that blocks should be 'of varying short lengths from around 60-100m to allow for variety' (2006, p. 74). There is widespread consensus among theorists and practitioners that connectedness and permeability are key features of a high quality built environment; they are conceptually related to inclusiveness, in that it is claimed that environments must be connected for 'all social and age groups to get about' (Burton and Mitchell, 2006; Carmona *et al.*, 2001; Rapoport, 1972, p. 146). This is discussed further in section 2.10.5.

2.8.1.4 Legibility

In his work on legibility, Lynch (1960) examines 'the mental image of that city which is held by its citizens' (p.2). Legibility, according to Lynch, is 'the ease with which [the city's]...parts can be recognized and can be organized into a coherent pattern' (1960, pp. 2-3). Lynch acknowledges that legibility is dependent not only on the built environment, but also, critically, on perceptions by individual inhabitants of that built environment (1960, p. 3). Bentley *et al.* note that a connected urban environment cannot function properly if people cannot 'grasp the place's layout, and what goes on there' (1985, p. 42). When

discussing physical elements of the urban environment, such as bus stops, Alexander *et al.* state that they should be easy to recognise, with activity going on around them which contribute to the user's sense of safety and comfort (1977, pp. 451-3). Lynch argues that, as well as through inherent characteristics of the built environment, an urban neighbourhood can be rendered legible through the use of way-finding devices such as signs and street names (1960, p. 3). Cullen refers to this as continuity in the context of communication between town and country via footpaths and walls (1961). Venturi *et al.*, in their examination of Las Vegas, found that 'if you take away the signs, there is no place [because] the desert town is intensified communication along the highway' (1977, pp. 13-18).

The social benefits of a legible built environment, as interpreted by theorists of the 'social-usage' tradition, are arguably of little use to residents as day-to-day users and are more relevant to visitors to a place. The influence of legibility on the individual's perceptual and cognitive experience and understanding of a place would not be considered to be of social benefit as there is little evidence suggesting that it has an impact on social relationships. Lynch questioned the validity of the notion of legibility later in his career, noting that if one was lost in a city, then a map could be consulted (1984, in Carmona *et al.*, 2003). And while he acknowledges variations in personal experience of the same built environment, he engages in aggregating environmental images, the validity of which has been questioned (Carmona *et al.*, 2003). Kaplan and Kaplan disagree with the organization of the built environment into an understandable, coherent form, arguing that people enjoy an air of mystery and surprise in a place (Kaplan and Kaplan, 1982, in Carmona *et al.*, 2003, p. 92). However, on balance, 'legibility' is accepted by many theorists as a contributor to a high quality urban environment (Cullen, 1961; Jacobs, 1993; Nasar, 1998, p. 7 for a list of studies that 'validate' Lynch's theory), and is cited as a feature of quality by writers of the 'making places' tradition (section 2.10.1).

2.8.1.5 Mixed land uses

A built environment with a mixture of land uses is supported as a feature of high quality by theorists and practitioners of the 'social-usage' tradition. A mixed use neighbourhood (including residential land) is desirable because it offers residents those services and facilities that they require regularly within their immediate vicinity. Jacobs states that a mix of uses is needed to reflect and support 'so many people...[,who,] among them contain so many different tastes, skills, needs, supplies and bees in their bonnets' (Jacobs, 1961, p. 159). There is, on the whole, consensus in 'social usage' theory, practice and policy that a mixture of uses is required in a high quality built environment (Alexander *et al.*, 1977;

Bentley *et al.*, 1985; Jacobs, 1961). However, there is disagreement about how those uses are constituted in a neighbourhood. Bentley *et al.* argue that urban designers should attempt to encourage as extensive a variety of uses as possible, rather than specify the optimum number and type of uses (1985, p. 28). Alexander *et al.* advocate local shopping streets, street cafes rather than non-street cafes, individually-owned shops over franchises and chains, as well as 'frequent marketplaces' and corner grocery stores but does not specify in more detail the services that should be offered (1977, pp. 174-178, pp. 246-251, pp. 4332-443). Bentley *et al.* highlight that the range of uses in a neighbourhood will be dependent, to varying degrees, on the overall demand for such uses, the supply of affordable space and the interaction between uses (i.e. the mutual support that different uses, services and activities can offer), as well as functional, political and economic feasibility (1985, p. 30). It therefore follows that the social benefits of a mix of land uses in a neighbourhood, such as increased opportunities for social interaction and increased feelings of safety due to increased natural surveillance and 'eyes on the street' (Jacobs, 1961), also vary, according not only to the range of uses, but also to the population they serve. A mixture of land uses as part of a high quality built environment is also discussed in the 'making places' Section 2.10.

2.8.1.6 Character

The theorists Jane Jacobs and Christopher Alexander were particularly interested in the character or sense of place that could be perceived by residents, users and visitors. For Jacobs, it was a result of a mixture of the features of the built environment and the supported aspects of social life in the neighbourhood (1961). People have a sense of place when they feel safe and secure in the streets where they walk, as a result of unforced natural surveillance and the knowledge that they are legitimate users of the neighbourhood. This is helped by a mixture of land uses, thereby giving people a stronger right to roam on the street (Jacobs, 1961, pp. 44-45, p. 74). For Alexander, this is 'the quality without a name' (1979, p. 39) and is a result of the fact that 'a person is so far formed by his surroundings, that his state of harmony depends entirely on his harmony with his surroundings' (p. 106). It is an intangible characteristic of a place, which Gertrude Stein encapsulated in her discussion of the antithesis of sense of place when visiting Oakland in California: she remarked that 'when you get there, there isn't any there there' (in Nance, 2005). It is not something that can easily be put into words or described: it is based on the feelings that you have, that you experience when in a place. Alexander attempts to describe it, claiming that it 'is not completely emulated in terms such as *'alive', 'whole', 'comfortable', 'free', 'exact', 'egoless', 'eternal'* (1979, pp.30-39). None of the

theorists and practitioners attempt to quantify aspects of 'sense of place', acknowledging that it is felt most strongly by those who live there and that it will differ from place to place, emphasizing the importance of the local context (Lynch, 1990; Whyte, 1988). The character of a place is distinct and it is both the character and the distinctiveness that should be retained if a perceived sense of place felt by residents and users is to prevail (Lynch, 1990, p. 680). Furthermore, the sense of place that one person feels differs from that of the next person, due to an individual's particular memories and experiences of that place (Lynch, 1960). While there is strong consensus that a sense of place is a vital feature of a high quality built environment, there is little guidance about how it is composed or how it can be identified. Most theorists and practitioners of the 'social-usage' tradition are arguably reconciled to not examining sense of place further than to recognise its existence and support its protection.

2.9 'Social-usage' to 'making places' tradition: the sustainability paradigm

Many of the ideas first brought to light by proponents of the 'social-usage' school of thought continue to be accepted by current theorists and practitioners in the 'making places' tradition. This can also be said for the 'visual-artistic' tradition: Carmona *et al.* argue that the two 'have become synthesized into a third, 'making places' tradition' (2003, p. 6). Proponents of this tradition are concerned with designing the urban environment as both 'an aesthetic entity and as a behavioural setting' (ibid., p. 7). The 'making places' tradition is argued to view 'urban design as the design and management of the "public realm"' (ibid.). This has also been taken up by policy: according to CABE and DETR, 'urban design is the art of making places for people':

> It includes the way places work and matters such as community safety, as well as how they look. It concerns the connections between people and places, movements and urban form, nature and the built fabric, and the processes for ensuring successful villages, towns and cities.
>
> (CABE and DETR, 2000, p. 8)

This tradition of 'making places' is arguably currently situated within the theoretical paradigm of sustainability: that is to say that the urban environment is viewed not only as providing a place for residents, users and their collective needs but also as a sustainable place, for all present and future residents, users and their collective needs. The Brundtland report of 1987 proved to be a critical document in the shift towards a focus on

sustainability in urban theory and practice (World Commission on Environment and Development, 1987). It states that sustainable development is required in order to support the needs of present generations without compromising the ability of future generations to achieve their own needs. This definition has been widely accepted since its conception (Elkin *et al.*, 1991), and has provided the context for a considerable literature on planning, architecture and urban design (Barton *et al.*, 2003; Healey, 1998; Jenks *et al.*, 1996; Lock, 2003; Robbins, 2004; Williams *et al.*, 2000a).

Sustainability has been translated and operationalized in many different ways within the context of the built environment (Jenks and Dempsey, 2005a; Williams *et al.*, 2000c). Adopting the holistic approach, Elkin *et al.* state that sustainable urban development 'must aim to produce a city that is 'user-friendly' and resourceful, in terms not only of its form and its energy efficiency, but also its function, as a place for living' (1991, p. 12). This approach to sustainable development has been superseded by the identification of three inter-related dimensions of sustainability: environmental, economic and social (Jenks *et al.*, 1996). Given the breadth of sustainability as a subject of study, its most relevant aspect here is social sustainability. The other dimensions, economic and environmental sustainability, may have varying degrees of importance – for example the relationship between biodiversity and the quality of open spaces (Devine-Wright *et al.*, 2006), or the economic value of high quality built environments (Carmona *et al.*, 2001), but are not discussed here.

Discussions of social sustainability are numerous and indicate no consensus on its definition, variously stated as incorporating aspects of health, community safety, participation and quality of life (Barton, 2000b, p. 9; Burton, 2000a; Pasaogullari and Doratli, 2004). There is, however, agreement that social sustainability encompasses social equity, or fairness. Government policy has included aspects of social sustainability in its definition of 'sustainable communities', which 'embody the principles of sustainable development' (ODPM, 2005a, p. 74). They are described as 'active, inclusive and safe' and 'fair for everyone' (ODPM, 2005a, p. 4).

While Carmona *et al.* do not explicitly make the conceptual link between the 'making places' tradition and social sustainability, it is arguable that a sustainable urban form corresponds strongly to theoretical and policy interpretations and understanding of a desirable setting for high quality places for people to live in (2003; Hasic, 2000; Lock, 2003; ODPM, 2005a).

2.10 The 'making places' tradition: urban design and sustainable communities

The tradition of 'making places' encompasses urban design theory, practice and policy, a significant proportion of which is incorporated within the concept of the 'sustainable community': urban design is described as central to the achievement of sustainability (CABE and DETR, 2000, p. 8). The 'making places' tradition is one within which urban design principles are employed to design places that are long-term homes for residents, closely situated conceptually to the 'sustainable community'. Therefore discussions and the identification of features of high quality built environments are located within in the sustainability paradigm. It is claimed that for built environments to be of a high quality, achieved through urban design, they must be sustainable; and for built environments to be sustainable, it is recommended that they be, among other things, of a high quality: a somewhat circular argument. As a starting point for this section, the concept of the 'sustainable community' as an oft-cited aim for a high quality urban environment is examined. For the purposes of the research at this stage, the physical features of 'sustainable communities' are focused on here. Other aspects of this concept relating to the support of social life in 'sustainable communities' are examined in Chapter Three.

There is considerable discussion about 'sustainable communities' but it has not resulted in one overarching definition. 'Sustainable communities' are conceptually close to 'livable cities' and the 'neighbourhood'; the former two have the common goal of supporting people to continue living in their communities 'now and in the future' (Barton *et al.*, 1995; Elkin *et al.*, 1991; ODPM, 2005a, p. 4; Power, 2004; Silburn *et al.*, 1999): the neighbourhood is a setting in which this can take place. It is argued that such communities provide for a 'high quality of life' which 'depends on creating an urban environment conducive to well-being' (Elkin *et al.*, 1991, p. 241). According to government policy, 'sustainable communities...meet the needs of existing and future generations' by being 'well-designed and built [and] featuring a quality built and natural environment' (ODPM, 2005a, p. 4, p. 74). Prescriptive theorists and practitioners have identified design principles that should be adhered to in the pursuit of the creation of such communities and neighbourhoods (for example, Barton *et al.*, 1995; CABE and DETR, 2000; Llewelyn-Davies, 2000; Urban Task Force, 1999). Others have identified physical characteristics which must be present in a livable city, sustainable community or neighbourhood (Barton *et al.*, 2003; Elkin *et al.*, 1991; ODPM, 2005a), while elsewhere key issues and dimensions of the design of the local environment are identified (Barton *et al.*, 1995; Carmona *et al.*, 2003).

While the link between the built environment and the support it offers residents in their daily lives is made by numerous theorists, the physical features of such a socially supportive and sustainable built environment are not agreed upon. The following section examines proposed features of high quality in the built environment, discussed in sustainability literature and the broader 'making places' tradition, and assesses them within the parameters and scope of this research.

2.10.1 'Making places': features of high quality in the built environment

The principal features of high quality in the built environment emerging from literature within the 'making places' tradition are listed below. They are frequently discussed as inter-connected features which contribute to a high quality, and sustainable, built environment. Several (marked *) are not discussed in detail here because, while they are highlighted as of importance to the quality of the built environment, their current interpretations have not changed or been developed significantly since their examination by theorists of the 'social-usage' tradition as discussed in Section 2.9.

- High residential density
- Mixed land use
- Accessibility
- Inclusiveness
- Connectedness and permeability *
- Legibility *
- Physical and perceived safety *
- Maintenance
- Attractiveness *
- Character

2.10.1.1 High residential density

High residential densities have become an increasingly important attribute in the pursuit of a sustainable urban environment in the UK (DETR, 2000b; Urban Task Force, 1999). High-density built environments have been favourably cited by supporters of various urban form concepts, including the 'compact city', multiple intensive land use (MILU), urban villages (and millennium villages) and new urbanist developments (Aldous, 1992; Jenks *et al.*, 1996; Lau *et al.*, 2005; Robbins, 2004; Thompson-Fawcett, 2000; Williams *et al.*, 2000a). Some of the hypothetical social advantages of high residential densities include equitable access to a range of key services and facilities, and open space within

walking distance (Burton, 2000b; Jacobs, 1961; Llewelyn-Davies, 2000; Urban Task Force, 1999; Williams, 2000), employment opportunities, low levels of social segregation and a reduced need to travel by car (Burton, 1997). However, there are theories and conflicting evidence about whether a high residential density built environment is a positive feature of a built environment. Public preference may be against high urban densities (Breheny, 1997, p. 213; Churchman, 1999), they may provide poor access to open space and job opportunities (Burton, 1997; 2000a), and have no causal association with social interaction (Raman, 2005). Despite this lack of consensus, the tenet of increasing residential density has been adopted by government in its Planning Policy Guidance Note 3: Housing, which states that new developments should 'make efficient use of land (between 30 and 50 dwellings per hectare net)' (DETR, 2000b, p. 19). This raises the question of how high 'high density' actually is in the UK; it is not clearly defined (Rudlin and Falk, 1995, p. 55). Table 2.1 provides some residential densities advocated by theorists, practitioners and policy-makers (after Dawson, 2004; Jenks and Dempsey, 2005b).

Table 2.1 Recommended residential densities in the UK

Source	Dwellings per hectare
(Current) Planning Policy Guidance Note: 3 (DETR, 2000b)	30-50*
Rudlin and Falk (1995)	50-80
Barton *et al.* (2003)	40
Greenwich Millennium Village, London	95**
Homes for Change, Manchester	119**

* Recommendations for new housing developments
** Actual residential density

The table shows that there is no agreement about recommended residential density for urban areas. Nor is the threshold above which people find residential density unacceptable identified (Breheny, 1997). Recommendations for residential densities vary according to culture as well as to features of the land itself: the island of Hong Kong, for example, has extremely high residential densities, due to widespread public acceptability and the limited land mass on which to build (Jenks and Dempsey, 2005b). Within the UK context, the lack of consensus arguably points to a requirement for residential densities to be examined on a case-by-case basis according to the policy in place at the time as well as the particulars of the place itself. However, due to the dominance of sustainability in literature within the 'making places' tradition of thought, there is widespread support for

residential densities that are higher rather than lower than present densities, although at what point higher becomes high, and how high densities should go, is unclear.

2.10.1.2 Mixed land uses

Mixed land use is a frequently cited feature of high quality built environments (also see section 2.8.6), and is promoted as a principal element of sustainable urban environments (Burton and Mitchell, 2006; Carmona *et al.*, 2001; Coupland, 1997; DETR, 2001; Grant, 2002; Talen, 1999; Urban Task Force, 1999). The claimed benefits of mixed land use include improved pedestrian access to key services and facilities for all residents of a neighbourhood, as well as increasing the opportunities for walking and cycling (Barton *et al.*, 2003; Burton, 1997; Coupland, 1997; Grant, 2002). Like high residential densities, a mix of land uses is promoted in government policy (PPG3) which advises local planning authorities to encourage, for example, the building of houses in urban areas and the conversion of premises above shops into residences (DETR, 2000b, para. 50).

However, like high residential density, there is a lack of consensus about what makes up a mixed-use built environment. There is little indication in the literature of the most appropriate number and types of land use to be included in a sustainable mixed-use neighbourhood. While it is simplistic to suggest that more than one land use in a neighbourhood therefore indicates mixed-use, prescriptive theory does not discuss all land uses in recommendations for new developments or sustainable communities and neighbourhoods. Neighbourhoods designed according to new urbanism principles do not include (heavy) industry in their urban designs (Grant, 2002). There are also certain LULUs or 'locally-unwanted land uses' such as prisons (Grant, 2002, p. 73), airports, or landfill sites claimed to be undesirable in residential mixed-use areas (Healey, 1997, p. 127).

There are however examples of prescriptive theory which identify those land uses which should be incorporated into livable places, sustainable communities and neighbourhoods, albeit without LULUs taken into account. Further to empirical research conducted in Avon, Winter and Farthing identified the eight services and facilities most frequently used when locally provided (1997, p. 127). These 'everyday eight' are listed below.

- Foodshop
- Newsagent
- Open space
- Post office

- Primary school
- Pub
- Supermarket
- Secondary school

Other services to which theorists claim that residents need local access, albeit on a less frequent basis, include a doctor's surgery (Barton, 2000c; Barton *et al.*, 1995; Barton *et al.*, 2003; Burton, 1997; Urban Task Force, 1999), chemist; café/ restaurant/ takeaway (Burton, 1997); bank or building society (Barton *et al.*, 1995; Burton, 1997); and community centre (Aldous, 1992). As with high residential density, there are claims that the provision of services and facilities is dependent on the requirements of the population, and that the suitability of the mix of uses therefore differs from neighbourhood to neighbourhood (CABE and DETR, 2000; Elkin *et al.*, 1991; Urban Task Force, 1999). The local context of the neighbourhood and the requirements of the population are therefore important in this matter.

2.10.1.3 Accessibility

Accessibility of a neighbourhood is invariably described in terms of how easily its residents are able to reach services and facilities (see Talen, 2003, p. 181). The Social Exclusion Unit (SEU) describes accessibility as the extent to which people can 'get to key services at reasonable cost, in reasonable time and with reasonable ease' (2003, p. 1). Unfortunately, it does not provide a definition of 'reasonable'. Accessibility relates both to providing people with services and facilities within a neighbourhood (Barton *et al.*, 1995), and to providing people with the means of frequent and reliable public transport to gain access to services and facilities further away (English Partnerships and Urban Villages Forum, 1998; Aldous, 1992; Social Exclusion Unit, 2003; Urban Task Force, 1999). Carmona *et al.* state that high quality urban design should, in part, provide good accessibility within and between places (2001, p. 8). Talen notes that accessibility has long been cited as an important element of a good urban environment including by Lynch and Jane Jacobs in the 1960s, and more recently by new urbanists such as Duany (2003; Talen, 2000).

Accessibility is very closely linked to other elements of high quality, particularly those pertaining to 'mixed-use' and 'connected' urban environments. A neighbourhood is not accessible without services and facilities available for residents' use; nor without a pedestrian, cycling and public transport network through which it is inter-connected to its own services and to services outside the neighbourhood. It has been shown that 'the likelihood of using...different types of recreational facilities decrease[s] with decreasing

levels of access' (Giles-Corti and Donovan, 2002, p. 1807). Prescriptive theorists have identified the degree of accessibility a neighbourhood should have in terms of distance for residents to its services and facilities (Aldous, 1992; Barton, 2000c; Barton *et al.*, 1995; Barton *et al.*, 2003; Burton, 1997; Urban Task Force, 1999). However there is no consensus on how accessible each service or facility should be. Table 2.2 gives some examples of this diversity. Another interpretation of accessibility relates to the non-physical aspect of equity: Burton discusses equitable access to services, facilities, open space, employment and other socially significant features of an urban area as 'reducing the gap between the advantaged and the disadvantaged' (1997, p. 26). Specific focus is also given to the accessibility to open space as an important characteristic of good quality places because of the social benefits such spaces have for residents (Brook Lyndhurst, 2004; Blackman *et al.*, 2003; Mulgan *et al.*, 2006). This is illustrated in Table 2.2 which outlines the extent of accessibility that residents should have to green, open space.

For the purposes of this research, equitable access is addressed, in small part, within the associated concept of inclusiveness, which focuses on the ability of all members of society to use a built environment (Section 2.10.1.4).

Table 2.2 Access to four key services and facilities in a neighbourhood

Source	Doctor's surgery/ health centre	Primary school	Local shops (type not specified)	Green, open space
Barton *et al.* (1995)	800-1000m	400-600m	400-800m	400-1000m***
Barton (2000c, p. 96)*	Within 800m	Within 400m	Within 400m	200- 800m****
Barton *et al.* (2003)	Within 400m	Within 400m	Within 400m	Within 400m
Urban Task Force (1999, p. 31; p. 61)	150-250m	150-250m	Within 600m	200-600m
Aldous (1992)**	---	Within 900m	Within 900m	Within 900m

* Barton indicates that 80% of homes should achieve these standards

** This refers to a hypothetical scheme adopting the urban village concept and indicating that certain services should be accessible within 10 minutes' walk or 900m

*** Allotment/ community garden within 400m, park/ open space on the green network within 800-1000m

**** Playground/ play space within 400m

2.10.1.4 Inclusiveness

Inclusiveness is a feature of the high quality urban environment consistently approved of by theorists, practitioners and users (Barton *et al.*, 2003; Engwicht, 1992; Kitchen and Schneider, 2002; Lock, 2003; Woolley, 2002; Coleman, no date). In very general terms, it is, along with the related term social inclusion, used to describe the ability of all people to realize their potential without suffering the negative effects of (for example) unemployment, low income, poor housing and bad health (Commission on Social Justice,

1994; Centre for Economic and Social Inclusion, 2002, p. 1). It is conceptually related to 'equity', and holds connotations of 'equitable access' to services and facilities and 'intra-generational equity' supporting the 'needs of the least advantaged in society' (Burton, 2000a; Elkin *et al.*, 1991; Section 2.10.4). In terms of the physical environment, inclusiveness has been described as relating to how welcoming public places are to all sections of society, including children and older people (Carmona *et al.*, 2004, p. 19; ODPM, 2005a; Blackman *et al.*, 2003). In this way it is related to comfort as defined by Burton and Mitchell in their research into the design of urban environments for older people (2006). They state that 'comfort refers to the extent to which streets enable people to visit places of their choice without physical or mental discomposure' and cite characteristics of comfortable streets as 'calm, welcoming and pedestrian-friendly' (Burton and Mitchell, 2006, p. 104) (also see Section 2.8.3). It also relates to Calthorpe's identification of comfortable streets as shaded for the 'comfort of the pedestrian [which] is key to creating a viable walking environment' (Calthorpe, 1993, p. 96).

Inclusiveness has been adopted in the government's sustainable communities strategy, as well as in the urban White Paper which states that there is a need to encourage 'well-laid out urban areas with...well-designed streets' to 'promote a better quality environment and encourage inclusive communities' (DETR, 2000a, p. 43; ODPM, 2005a) (ODPM, 2005a; DETR, 2000). The level of inclusiveness a public place is felt to have – which can be influenced by the services and facilities present and the quality of those services and facilities – can have a direct influence on the level of use of that place. In research conducted by the University of Sheffield for the Department of Transport, Local Government and the Regions, Woolley notes that 'disabled people were more put off than non-disabled people from using urban green spaces due to the lack of, or poor standard, of facilities such as toilets and cafes...and the lack of adequate seating' (2002, p. 44). Mitchell *et al.* have found that built environments that have particular features such as at least a minimum of plainly-designed signage, and an urban layout of short, narrow streets, can aid older people with dementia navigating a neighbourhood, as well as benefiting other groups such as children and foreign visitors (2004). While inclusiveness is a frequently cited feature of high quality built environments, it is on the whole only loosely defined as meaning 'for all', in terms of age, gender, ethnic group, economic status and physical disability (for example, see Barton *et al.*, 2003; DETR, 2000a; ODPM, 2005a).

2.10.1.5 Legibility

Kevin Lynch's legacy is still strong, with recent academic research testing (Yeung and Savage, 1996), and some city projects (notably in Bristol) applying, his theory of legibility

(Hazel and Parry, 2004; Kelly, 2001a; Kelly and Kelly, 2003; Zmudzinska-Nowak, 2003). There has been a shift in how legibility is examined; academic researchers and theorists are developing 'legibility' as being an individual's perception of the built environment and its evaluative appraisal, with focus on the 'human aspects' (Nasar, 1998; Rapoport, 1977; Zmudzinska-Nowak, 2003). By contrast, in practice and in prescriptive theory, Lynch gives pragmatic interpretations of successfully understanding the city through, for example, wayfinding and signage (Carmona *et al.*, 2003; CABE and DETR, 2000; Kelly, 2001b; Living Streets, 2002; Llewelyn-Davies, 2000). This is also referred to as continuity where, for example, street frontages are discussed in relation to their legibility and role in increasing understanding of the environment by the user, for instance by showing where public and private space start and stop (CABE and DETR, 2000; Cullen, 1961; Moughtin *et al.*, 1999; Urban Task Force, 1999). The dominance of Lynch's original interpretation of legibility, ease of finding one's way around the city by way of landmarks, paths, nodes, edges and districts, is of less significance for this research; wayfinding aids are arguably more important for visitors to a place. However, empirical research has focused on identifying such features of a legible urban environment are said to include a hierarchy of street types, buildings with clear, 'unambiguous functions and entrances' and clear separations of public and private space (Burton and Mitchell, 2006, pp. 76-77). This broad understanding and widespread adoption of his theory makes legibility an objective of high quality built environments. As discussed in Section 2.8.5, the social benefits of legibility in a neighbourhood are not explicit in the theory; however, continued research focuses on the individual perceptual and cognitive effects of legibility (Nasar, 1998; Ramadier and Moser, 1998; Zmudzinska-Nowak, 2003). However, the aim of this research is to provide a comprehensive definition of a high quality built environment; not one which defines a high quality built environment simply as one which has social benefits. Lynch's theory of legibility continues to be discussed and examined as a feature of high quality by theorists, practitioners and policy makers, and so it forms part of the definition of a high quality built environment.

2.10.1.6 Physical and perceived safety

Perceptions of neighbourhood and local safety continue to be of importance to people's lives, and examinations by theorists of the 'social usage' tradition of the built environment as a contributory factor to safety are still relevant today (Jane Jacobs' work is discussed by Robbins, 2004, Etzioni, 1995, Aldous, 1992, Nash and Christie, 2003 among many others). UK government policy in its 'liveability strategy' which it has operationalized through the establishment of targets for local service providers about levels of crime and

anti-social behaviour has adopted the frequently cited theory that safety is fundamental to a high quality built environment (ODPM, 2005c). Recently, calls have been made for public spaces to be made safer, with the return of park wardens to provide users with 'visible figures of authority' so that 'parks, gardens and squares...[no longer] feel uncared for and intimidating' (Mornement, 2005, p. 1). Empirical research carried out in deprived areas in the UK found that provision of public spaces such as parks and play areas is not sufficient in itself in enhancing a neighbourhood 'if residents do not feel the new space is secure from crime...and safe from road traffic' (Brook Lyndhurst, 2004, p. 68). It is claimed that one of the main influences on criminal and antisocial behaviour is the nature of the physical environment, and that certain physical features 'are strongly associated with criminal and antisocial behaviour' (Association of Chief Police Officers Crime Prevention Initiatives Limited [ACPO-CPI], 2004, p. 3). These might include 'inappropriately located footpaths' or places which 'cause a perception of fear' (ibid.). Such features can contribute to poor quality built environments which are said to induce feelings of discomfort and insecurity and have a detrimental effect on social interaction and pride in the area (ACPO-CPI, 2004, p. 5). There is however no comprehensive empirical evidence on which to base such claims, in part because of the myriad of social conditions that sustain and contribute to crime (Ekblom, 1998, in Goldblatt and Lewis, 1998). Despite this lack of an empirical research foundation, safety continues to be regarded as an important component of the high quality built environment.

2.10.1.7 Maintenance

There is overwhelming consensus in prescriptive theory and practice in the 'making places' tradition that good maintenance is an important feature of high quality built environments (Carmona *et al.*, 2004; CABE and DETR, 2002; Gillespies, 1997; Llewelyn-Davies, 2000; Urban Task Force, 1999). A MORI poll conducted for CABE, which asked people how the appearance of the areas in which they lived could be improved, found that 'general cleanliness' and infrastructure maintenance (roads, pavements, lighting) were among the top four concerns (CABE, 2002). According to the *Local Environmental Quality Survey of England 2004/05* by Environmental Campaigns Limited (ENCAMS, 2005), national levels of cleanliness and maintenance in public spaces have been at an unsatisfactory level ever since the survey began three years ago (ibid, p. 13). Gillespies, in its report of technical guidelines for high quality streets, attributes such poor results to 'a tolerance of...casual crime (such as graffiti, litter and minor damage to street furniture) that devalues the inherent quality of the environment' (1997, p. 11). Within the government's 'liveability' strategy, public policy has recently become focused on the

significance of maintenance of the built environment (ODPM, 2002; 2005b). Worpole comments that:

> politicians have belatedly realized that uncollected rubbish, graffiti, broken pavements and bad street lighting not only have physical ill effects on the environment...poor maintenance sends out the simple but graphic message that 'nobody cares'. (Worpole, 2003, p. 130)

This idea of 'nobody cares' is closely linked to the concept of the 'broken window syndrome', where even 'cosmetic damage can invite more serious anti-social or even criminal behaviour' (Wilson and Kelling, 1982, cited in Nash and Christie, 2003, p. 47). In addition, Shaftoe states that there is a 'psychological proposition that brutal, neglected environments encourage (or at least do not inhibit) brutal and uncaring behaviour' (Shaftoe, 2000, p. 243). Cheetham's argument, that 'well-cared for environments are less subject to graffiti and vandalism', also supports the presence of 'broken window syndrome' (Cheetham, 1994, p. 17).

There is one significant caveat that must be acknowledged in an examination of maintenance of the built environment. Maintenance is as much about the quality of a service provided by the local authority, for example, of street cleaning, as it is about the quality of the physical environment (Urban Task Force, 1999). An issue for this research, discussed in further detail in Chapter 4, is how to examine the perceived maintenance of a neighbourhood at one point in time and reconcile that with the maintenance services actually provided by local authorities.

Finally, the durability of the built environment, or 'building to last', is related to maintenance as an element of good quality in urban design and planning literature, (Gillespies, 1997; Jacobs, 1993; ODPM, 2005a; Tibbalds, 2001; Urban Task Force, 1999, p. 71). While aspects of durability applying to the neighbourhood are examined in this research, durability in relation to individual buildings and the materials used within the built environment is outside its scope.

2.10.1.8 Attractiveness

The pleasant appearance of a place continues to be cited frequently as a feature of a high quality built environment in the 'making places' theory, practice and policy (Carmona *et al.*, 2004; Barton *et al.*, 2003; Carmona *et al.*, 2001; DETR, 1999; English Partnerships, 1998; IHIE, 2002; Llewelyn-Davies, 2000; Long and Hutchins, 2003; ODPM, 2003a). As previously stated, attractiveness is, however, a qualitative judgment made by the beholder, and therefore can differ from person to person. Having said this, prescriptive theorists and practitioners do not recognize this, and there continues to be an assumption

that all parties involved understand what is meant by the attractiveness of a place. The Central London Partnership in its publication *Quality Streets* states that people are said to be drawn to attractive places and pleasant environments but does not specify their particular attributes, a lapse which is common in the literature (Aldous, 1992; Barton *et al.*, 2003; Central London Partnership, 2003, p. 2; DETR, 2000a; Elkin *et al.*, 1991; ODPM, 2002). What is also apparent in the literature is that where theorists and practitioners identify attractiveness in the urban form, it is mainly characterized by trees and greenery (CABE and DETR, 2000; DoE, 1972; Elkin *et al.*, 1991; Llewelyn-Davies, 2000; ODPM, 2002) – as first suggested by Howard and Abercrombie (Howard, 1898; Abercrombie, 1933). Other features pertaining to the attractiveness of the built environment in the 'making places' literature include ornamentation, public art, lighting and street furniture (CABE Space, 2005b; Moughtin *et al.*, 1999; Phillips, 2002). However, there is no agreement on how these specifically contribute to attractiveness, as opposed, for example, to a place's legibility, safety or sense of place, which are cited more frequently (CABE and DETR, 2000; Hazel and Parry, 2004; Gehl *et al.*, 2004).

Many sources refer to the social benefits that an attractive built environment is claimed to confer. A sense of community is supposed to arise in an attractive built environment because it gives residents something to be proud of (ODPM, 2002; DETR and CABE, 2001; 2005b). It is also linked theoretically to a better quality of life, and increased satisfaction with one's neighbourhood (DoE, 1972; DETR, 1999; Erkip, 1997). The attractiveness of a neighbourhood is also claimed to be critical to the creation of sustainable communities, in part, through engendering a sense of identity and belonging (Llewelyn-Davies, 2000; ODPM, 2005a).

2.10.1.9 Character

The character of a place is frequently referred to as a feature of high quality built environments in recent sustainability-focused prescriptive literature (CABE and DETR, 2000; Llewelyn-Davies, 2000; Urban Task Force, 1999). For theorists from the 'social-usage' tradition of thought, sense of place is determined primarily by the way in which the built environment supports the daily lives of residents. This view is supported by the empirical findings of the Royal Commission on Local Government in England (in the Community Attitudes Survey published in 1969) which found that sense of place and place attachment is primarily 'concerned with the interaction of the individual with other people – rather than with his relationship to his physical environment' (cited in Relph, 1976, p. 33).

There has been a conceptual shift from the idea of social life structuring territory to one of territory shaping social life (Dear and Wolch, 1989). The latter counts both theorists and practitioners of the 'making places' tradition amongst its supporters. This shift has seen environmental determinism, possibilism and probabilism and other associated approaches rise in importance in urban theory, particularly in the UK with the recent adoption by the government of neighbourhood improvement policies (Carmona *et al.*, 2003; Department of the Environment Transport and the Regions, 2000b; Office of the Deputy Prime Minister, 2005a). The focus for those adhering to the 'making places' tradition is that the character of a place is largely embodied in the physical form itself, designed or otherwise. Prescriptive theory advocates 'enriching the existing', respecting 'local traditions', achieving a 'sense of place' through the careful design of spaces and buildings and the relationship between them', and the retention of landmarks (Elkin *et al.*, 1991; English Partnerships and Urban Villages Forum, 1998, p. 7; Llewelyn-Davies, 2000, p. 14; Urban Task Force, 1999, p. 71). This is also supported by new urbanists who, supporting traditional-style neighbourhood developments, argue that the *genius loci* or sense of place can be created 'through proper design and placement of public space' (Duany, 2003; Duany and Plater-Zyberk, 1992, cited in Talen, 2000, p. 347). This is distinct from Jane Jacob's discussions of sense of place, which focused on an organic identity arising from a neighbourhood: one that cannot be designed in (1961).

Despite the consensus on the importance of a place's character or sense of place, (prescriptive) theory which refers to the character of a place as necessity for a high quality built environment discusses it in abstract terms and refrains from offering specific guidance on how it can be achieved. This is largely because of recognition of the individual nature of places and the infinitesimal permutations of how a built environment can evoke a sense of place (Relph, 1976). Sense of place is consistently cited in all of the traditions of thought as a feature of high quality in the built environment, even though definitions are not provided.

2.11 Conclusions

This review of the literature on the quality of the built environment has highlighted the breadth of theoretical debate on, and interpretation of, specific features of high quality built environments. A more detailed understanding of these features has been provided, particularly with reference to recent UK government policy. The main object of this review has been to highlight those attributes most commonly identified as features of a high quality built environment as the basis for empirical investigation. These features are summarized overleaf:

- High residential density
- Mixed land uses
- Accessibility
- Connectedness and permeability
- Legibility
- Attractiveness
- Inclusiveness
- Maintenance
- Natural surveillance
- A sense of place

This review of the literature provides the foundation for the next stage, developing the methodology for the research. It permits the selection of a range of indicators to represent these features of high quality in the built environment, so that different levels of quality can be compared across a sample of neighbourhoods, and examined in relation to social cohesion (see Chapter Five). Through this subsequent analysis, it will be possible to address the principal research aim: to determine the influence of the quality of the built environment on social cohesion in neighbourhoods in the UK. First, it is necessary to define social cohesion for the purposes of this research. This is the objective of Chapter Three.

Chapter Three – Defining Social Cohesion

Social cohesion: 'the action or condition of cohering; cleaving or sticking together' (Oxford English Dictionary, 2005).

'The kernel of the concept is that a cohesive society 'hangs together'; all the component parts somehow fit in and contribute to society's collective project and well-being' (Kearns and Forrest, 2000, p. 996).

'Social cohesion, the social glue of a society...' (Forrest and Kearns, 1999, p. 7).

The aim of this chapter is to examine the concept of social cohesion and to define it for the purposes of this research. The following sections examine the theoretical interpretations of social cohesion and, while acknowledging that the concept is applied at different scales, provide a definition of social cohesion experienced at the neighbourhood scale.

3.1 Introduction

The study of social cohesion has long occupied sociologists and social psychologists; they have examined society and social relations in a variety of social settings (Durkheim, 1893 [1933]; Fischer, 1976; Fischer *et al.*, 1977; Kellerman, 1981b; Simmel, 1955; Tönnies, 1955). As the quotations at the beginning of the chapter suggest, 'social cohesion' is commonly used in descriptions of the social order and norms in a given place or social setting (Coser, 1977; Forrest and Kearns, 2001; Giddens, 1993; Turok *et al.*, 2004). Such descriptions occur in a range of discussions, empirical studies and policy documents related to topics as diverse as economic competitiveness (Turok *et al.*, 2003; Amin and Tomaney, 1995; Boddy and Parkinson, 2004), citizenship in European cities (Penninx *et al.*, 2004) and dispute and conflict in the suburbs (Baumgartner, 1988). Within the UK context, sustained attention is currently being paid to social cohesion in national policy, particularly in relation to immigration and 'multiculturalism' in the light of the disturbances in the northern towns of Bradford, Burnley and Oldham in 2001 (Bagguley and Hussain, 2006; Commission for Racial Equality [CRE], 2002b; Home Office, 2006a). Partly in response to these disturbances, in 2006, the Commission on Integration and Cohesion was launched (Kelly, 2006). Social cohesion is also commonly discussed as 'a key aspect of social sustainability' and has been incorporated into public

policy on 'sustainable communities' (Burton and Mitchell, 2006, p. 12; Office of the Deputy Prime Minister [ODPM], 2005a).

Social cohesion is discussed on a number of different scales, including the societal level and the more micro social and physical settings such as the city, community, or neighbourhood. The neighbourhood is described in theory and UK policy as an important setting for social cohesion (CRE, 2002a; Forrest, 2004; Forrest and Kearns, 2001; House of Commons, 2004; Meegan and Mitchell, 2001; Pierson, 2002). However, there is no consensus on how social cohesion is to be defined at this scale (Bollen and Hoyle, 1990; Stafford *et al.*, 2003). Given its application at different social scales, it is perhaps inevitable that conceptual overlaps with other closely related terms occur. For example, concepts such as social capital and social inclusion are commonly discussed in relation to social cohesion, and in some cases the terms are interchanged (Hirschfield and Bowers, 1997; Pierson, 2002). This has arguably contributed to confusion in interpretations of social cohesion and in its relationship to other, related concepts. Furthermore, claims as to whether the nature of social cohesion is inherently positive or negative differ. According to some theorists, too much integration or social cohesion can have negative impacts on society, resulting in the formation of close-knit and insular groups, sometimes exclusive in their membership, accepted widely as an undesirable outcome (de Tocqueville, cited in Forrest and Kearns, 2001; Bion, 1961, cited in Kellerman, 1981a). Kellerman argues that '*high* [or strong] *cohesion...is not a universal cultural attribute that should be valued for its inherent goodness*' (1981b, p. 13, author's italics).

This chapter provides a review of the literature on social cohesion and other related concepts, and contributes to theoretical debates through its definition of social cohesion as experienced at the scale of the neighbourhood. This involves the identification of a number of dimensions, or antecedents, of social cohesion, experienced by residents in a neighbourhood, and, as the review shows, essential for social cohesion to occur.

The definition of social cohesion adopted for this research is presented in Section 3.5.1. A 'working' definition of social cohesion is used as a starting point here (after Jary and Jary, 1991) from which an understanding of the concept is developed throughout the chapter. Social cohesion is broadly described as **the integration of the behaviour of individuals or groups in a social setting**. The following sections show how this broad definition can be developed and enhanced to provide a suitable definition which accounts for the scale and specific requirements of the research.

3.2 Social cohesion and social order

Stafford *et al.* argue that social cohesion 'may be best thought of as an umbrella term for a number of related, but separate constructs' (2003, p. 1472). These constructs contribute to social cohesion, which is described as the integration of the behaviour of individuals or groups in a social setting. One of the constructs said to contribute to social cohesion is social order. Social order has been defined as 'the stable patterns of social expectations and social structure that exist in any society' and the maintenance of these patterns (Jary and Jary, 1991, p. 589). The nature of the social expectations and the social structure arguably has a bearing on the presence, absence and nature of social cohesion, or, broadly speaking, the integration of behaviours, occurring in a social setting. Social order has been discussed and examined in sociological literature in various ways. The primary way in which it is argued to prevail in human settlements is through widespread adherence to norms and/or rules within these settlements (Giddens, 1993, p. 115). Such adherence includes communication via a common language (Wirth, 1964), following its rules of verb conjunction and sentence structure, or observation of the rule of driving on the left-hand side of the road in the UK. Giddens attributes this social order to people's force of habit: 'we most often follow social rules or norms because, as a result of socialization, it has become habitual for us to do so' (1993, p. 118). This social order is described as a highly sophisticated social phenomenon in which people engage (Kellerman, 1981a; Scott, 1981).

Durkheim, the principal proponent of theory on social order, introduced the idea that 'society is a moral...entity whose intrinsic feature is a set of commonly held values and beliefs', also described as the 'collective conscience' (Durkheim, 1893 [1933], p. 79; Lockwood, 1992, pp. 7-8; Parsons, 1951). Durkheim argued that there is an inherent impulse which everyone possesses 'to seek harmony with the society to which we belong, and, with this purpose, to adopt the ways of thought or action which surround us', guided by the norms and values that are shared by all in a society (Durkheim, 1952, p. 124). This 'collective conscience' is the result of the individual's 'need for [moral] discipline' and the 'need for attachment to groups' (Durkheim, 1961; Lockwood, 1992, p. 4). People therefore are said to need to follow norms – norms being what 'actors expect, and have a right to expect, of one another at the concrete level of social interaction' and 'may be said to be the structural expression of the values and beliefs' (Lockwood, 1992, p. 391; Parsons, 1961).

The normative functionalist approach to social order and disorder is challenged by Lockwood, among other theorists; he argues that Durkheim makes two untenable assumptions: firstly that order or disorder is 'defined by the degree of moral consensus'

(Lockwood, 1992, p. 17). The limiting factors of this are, on the one hand, solidarity – social order by consensus – and, on the other, anomie – 'a state of affairs in which a common value system is lacking' (Durkheim, 1952; Fischer, 1976; Giddens, 1978; Lockwood, 1992, p. 152). Lockwood argues that a total absence of moral regulation 'is tantamount to the termination of society' (1992, p. 18). He goes on to argue that Durkheim ignores another type of social disorder, the schism, which he describes as 'a form of disorder in which society becomes polarized around two opposing value and belief systems' (Lockwood, 1992, p. 17). Durkheim's second assumption, identified as untenable by Lockwood, is that 'shared values are ultimately the only major source of the stable regulation of social interaction and of the structuring of wants or interests' (*ibid*). This assumption is challenged by conflict theorists who argue that Durkheim took no account of the place, or sources, of social conflict in society (Giddens, 1977; Lockwood, 1992). Conflict theorists attribute social order to 'the balance of power between conflicting groups or classes', but explain any common values shared by the population in different ways, including the outcome of 'ruling-class indoctrination', or 'a component of class solidarity' (Lockwood, 1992, p. 386). Coser (1956, p. 154) argues that:

> conflict...frequently helps to revitalise existent norms; or it contributes to the emergence of new norms. In this sense, social conflict is a mechanism for adjustment of norms adequate to new conditions. A flexible society benefits from conflict because such behaviour, by helping to create and modify norms, assures its continuance under changed conditions.

Rex, in his analysis of Coser's work, suggests that he 'seems to go far towards saying that the balance of power is the basic factor in social relationships and that the normative structure is a dependent variable' (1961, p. 116). Rex proposes that, in situations where there is a conflict about desired outcomes, 'the behaviour of actors towards one another may not be determined by shared norms but by the success which each has in compelling the other to act in accordance with his interests. Power then becomes a crucial variable in the study of social systems' (1961, p. 112).

While conflict theory, as 'a necessary corrective to the model of society provided by normative functionalism', goes some way to explain social disorder and conflict, it is criticized for being unable to account for social order or norms and values (Lockwood, 1992, p. 386). Such critics do not use a 'rational or conflict-free ideal' in their analyses because they do not believe in one: 'they emphasise that conflict and its roots are permanent and that conflicts of interest are inevitable' (Wallace and Wolf, 1999, p. 118). It is also argued that, while the normative functionalist model of '"complete [social]

integration"...is inadequate for the analysis of modern industrial societies and plural societies brought into being by culture contacts' (Rex, 1961, p. 114), it is problematic to have two separate and distinct theories explaining social order and social disorder alongside one another (Dahrendorf, 1959, p. 164; Lockwood, 1992). This latter criticism is also levelled at the 'coercion model'; a theory developed in reaction to normative functionalism which 'views social structure as a form of organization held together by force and constraint' and is rooted in Marxist theory of class divisions (Dahrendorf, 1959, p. 159; Lockwood, 1992; Rex, 1961). Other approaches to explaining social order include structuration theory, which conceptualizes social structure as 'rules and resources drawn upon by actors' which generate, and are generated by, social interaction (Giddens, 1977, p. 14) and as symbolic interactionism which 'seeks to explain action and interaction as the outcome of the meanings which actors attach to things and social action' (Blumer, 1969; Jary and Jary, 1991, p. 645; Mead, 1934). These approaches are arguably not direct challenges to normative functionalism, but rather are conceptually linked to the latter by their acknowledgement of norms and values, and formulated to explain changes in behaviour in modern and post-modern social life (Wallace and Wolf, 1999).

Despite a plethora of competing and complementary theories and approaches, the normative functional approach to social order continues to hold sway in current theory, practice and policy on social cohesion. Janowitz attributes the widespread desire for social cohesion to the idea that for it to function effectively, 'society requires a set of informal and formal norms which highlight "cooperative" arrangements' (1978, p. 42). Recent accounts of social cohesion in the UK commonly describe it as a desirable outcome requiring common norms and values to occur (Cantle, 2001; Forrest and Kearns, 2001; House of Commons, 2004; Levitas, 1998; Stafford *et al.*, 2003; Turok *et al.*, 2003, p. 36). Therefore while the nature of the relationship between social cohesion and social order is unclear - social cohesion has been described as a sub-category of social order (Jenson, 1998) and social order as a dimension of social cohesion (Forrest and Kearns, 2001) – their interdependence is widely acknowledged. The context within which social cohesion arguably occurs has, however, changed at a conceptual level, in part due to changes in modern[1] (as opposed to traditional[2]) society, but also because of its application by a mixture of theorists and policy makers in the UK context.

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[1] 'modern' is used in this chapter loosely to indicate non-traditional societies and so refers to industrial, post-industrial as well as post-modern (and post post-modern) societies, as well as generally to refer to the recent 'contemporary ways of doing things' (Jary and Jary, 1991, p. 404).

[2] 'traditional' is used here to refer to a non-industrial society, presumed to be static, and is contrasted with a modern, changing industrial society (Jary and Jary, 1991, p. 666) There are difficulties inherent in using 'traditional' which arguably contributes to oversimplification in contrasts with modern society. While it is not intended for this chapter to contribute to such 'simplifications', it is referred to here because it is used by theorists in their discussions of social cohesion.

3.3 The changing context of social cohesion

Theories of social order and disorder offer explanations of why a state of social cohesion is preferable to one of anarchy and unrest. Such theories are used and interpreted by different actors operating within different contexts and are arguably unable to give a holistic account of all human behaviour in a given social setting. Wallace and Wolf argue that it is common for sociological theorists to 'adopt insights that seem appropriate to the problem at hand rather than confining themselves to a predetermined approach' which they describe as an 'eclectic and inclusive approach'; this is illustrated in the trend towards the integration of analysis at macro and micro levels (Wallace and Wolf, 1999, p. 411). This is relevant to this discussion of social cohesion because it is examined at different scales by theorists; the focus of this research is social cohesion in the neighbourhood setting. However, there is a considerable literature on social cohesion at the societal level, of conceptual importance in arriving at a definition for the purposes of this research.

It is argued by many theorists that social cohesion in non-traditional societies is fundamentally different from that in traditional societies (Coser, 1977; Durkheim, 1952; Fischer, 1982; Giddens, 1972; Nisbet, 1966; Pahl, 1991; Sayyid, 2004; Wilson, 1985). Modern social life has long been characterized as a pair of binary oppositions: 'gemeinschaft and gesellschaft, mechanical and organic, folk and urban... traditional and modern and so on' (Calhoun, 1991, p. 97). It could be argued that this is attributable to a radical change in the nature of social interaction and its relationship with time and space: communication was once primarily face-to-face and now is increasingly remote, due to advances in technology (Giddens, 1977, pp. 202-3; Wallace and Wolf, 1999). For Calhoun, the most significant change in modern everyday life has been the major split between 'direct interpersonal relationships and the mode of organization and integration of large-scale social systems' (1991, p. 96). Wilson attributes such a change to industrialization and the intensified division of labour and sources of power (1985, p. 317). The social cohesion said to occur in traditional societies has been argued to be of a higher moral order because it is based on strong and consensual values. Comte sees this as replaced in modern society by a 'breakdown...of traditional forms of association' (Giddens, 1972; Nisbet, 1966, p. 57; Wirth, 1964). It is argued that this has been further exacerbated by the more recent 'demoralization' of work through a process of impersonalization. The role of the worker 'now transcends the person' and 'his moral quality...[is] regarded, industrially and commercially, as a matter of indifference' (Wilson, 1985, p. 321). This hypothesis was questioned, among others, by Durkheim, who stated that social cohesion still occurs in modern society but is of a different kind to the cohesion

of traditional society (Durkheim, 1893 [1933]; Pahl, 1991). He argued that social cohesion in modern society is based on 'relationships of exchange' and co-operation rather than the *consensus universel* which forms part of 'simpler societies' (1898, cited in Giddens, 1978, p. 22; Wilson, 1985).

In post-industrial societies such as those of the UK and the US, it is argued that the extent and intensity of social cohesion have dropped further since the end of the Second World War (Young and Shils, 1953, and Hill, 1990, both cited in Pahl, 1991; Putnam, 2000). Robert Putnam's work on social change in the US since the 1950s found that the decline in social phenomena, such as civic engagement, was partly due to suburbanization and urban sprawl, dispersing residents further away from each other than before, the privatization of leisure time through electronic entertainment, and a generational change: a 'slow, steady and ineluctable replacement of the long civic generation by their less involved children and grandchildren' (Putnam, 2000, p. 283). In the UK, Peter A. Hall found that levels of community involvement, charitable endeavour, and informal sociability 'have remained resilient' and have not experienced the same decreases as in the US (1999). Nevertheless, there is a common belief that a crisis of social cohesion is being experienced in the UK, particularly in disadvantaged areas (CRE, 2002a; Forrest and Kearns, 2001; Home Office, 2006a; Pierson, 2002). The contextual situation of social cohesion in the UK needs to be examined in further detail.

3.3.1 Social cohesion in the UK context

If the approach to understanding social cohesion is based on normative functionalism, which regards social cohesion as 'vested in shared values...and mores, common within and throughout a society', it is suggested that for this approach to be adopted, it should also be applicable on a more micro scale, such as the community or neighbourhood (Wilson, 1985, p. 316) as it is questionable whether social cohesion at the local level can be meaningfully aggregated to apply at a national level. Ruth Kelly, the current Secretary of State for Communities and Local Government, in her speech at the Launch of the Commission on Integration and Cohesion, echoes this sentiment when she suggests that British residents can be viewed as a disaggregated 'set of local communities' rather than as one collective homogeneous group (2006). Furthermore, such a localized approach arguably captures any differences in the shared values present in different social settings (after Durkheim, 1893 [1933]).

It is not uncommon for social cohesion, and its associated aspects, to be discussed as a national and societal phenomenon (CRE, 2002b; Lister, 2000; Meghji and Grewal, 2005; Russell, 1948a; 1948b). It is argued, for example, although it is not the focus of this

research, that social cohesion can be achieved through 'formal expression of moral prescriptions' which promote conformity such as in legal codes (Giddens, 1978, p. 23; 1993). It is beyond the remit of this research to examine the law and its relation to social cohesion in the UK context for two reasons: the scale of this research is not national, a more meaningful scale at which to examine adherence to formal regulation than the neighbourhood, nor is the formal nature of social cohesion examined. Having said this, it is worth noting that national policies have been linked to social cohesion in the UK, including the Race Relations Act and the recent changes to citizenship legislation (Bagguley and Hussain, 2006; CRE, 2002b; Hansen, 2003; Ratcliffe, 2000). It is, however, also common in the UK for policy and research pertaining to social cohesion to be applied at different scales or settings. This presents particularly acute problems because of the different ways in which social cohesion is interpreted, understood conceptually and examined, depending on the scale of the social, and in some cases, political and economic, setting. The following sections examine particular interpretations of social cohesion within the context of UK theory and policy.

3.3.1.1 Social cohesion and sustainable communities

The concepts of social cohesion and social sustainability converge conceptually in UK theory and policy. Social cohesion is argued to be a key aspect of social sustainability (Burton and Mitchell, 2006, p. 12), and the definition of a sustainable community outlined by the Office of the Deputy Prime Minister states that such a community should be 'a diverse, vibrant and creative local culture, encouraging pride in the community and cohesion within it' (ODPM, 2003a, p. 5; 2005a). This social dimension became more prominent in discussions of sustainability after the World Summit on Sustainable Development in Johannesburg, 2002 (Kearns and Turok, 2004). The oft-cited definition of sustainability was coined by the Brundtland Commission in 1987 as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Elkin *et al.*, 1991, p. 1). Interpretations of social sustainability state that intra-generational equity ('equity within the current generation') is required; this ensures that 'everyone within the community benefits from the higher quality of life that sustainability should bring' (Elkin *et al.*, 1991, p. 2; Kearns and Turok, 2004, p. 21). Social cohesion, meaning the integration of behaviour in a social setting, in this context is closely related to social inclusion since 'all social groups should feel able to enjoy an area's public life free from fear of attack, abuse or hostility' (Nash and Christie, 2003, p. 39). It is also related to inclusion and equality in terms of access to opportunity as well as to support systems, and, in more tangible terms, local access to services and facilities (Burton and Mitchell, 2006; Kearns, 2004; Turok *et al.*, 2003; Williams *et al.*, 1996).

Examining social cohesion within the local context of a community or neighbourhood can be problematic because of the vast array of external factors outside the boundaries of a community or neighbourhood that may affect the nature and extent of social cohesion in any given area (Home Office, 2003). Criticism can also be made of the implicit assumption behind such an interpretation of social cohesion – that social groups can and actually do integrate with each other. It might be unrealistic to expect diverse social groups, who may have little in common apart from physical proximity, to integrate (Raco, 2003, cited in Kearns and Turok, 2004; Nash and Christie, 2003, p. 39). This also highlights a conceptual difficulty in reconciling definitions and interpretations of social cohesion in national policy to the small-scale community and neighbourhood level. Goodchild and Cole (2001) ask whether the cohesive communities that 'sustainable communities' policy is promoting are proof of insular, segregated communities; an arguably unintended but perhaps inevitable consequence of social cohesion. This point was brought to the attention of UK policymakers and academics, as were the sometimes conflicting relationships that different social groups have in the same neighbourhood after the riots in the north of England in 2001.

3.3.1.2 Social unrest: Bradford, Burnley, Oldham and community cohesion

The main impetus behind the recent revived interest in social cohesion has been acknowledged as the 'disturbances in 2001' in the northern towns of Bradford, Burnley and Oldham (House of Commons, 2004, p. 9). During the summer of 2001, racially motivated clashes among residents, and between residents and the police, turned to rioting, involving over 1400 people. This resulted in over 470 people injured and around 400 arrests (Denham, 2002; Ritchie, 2001). Several reports examining the national issues leading to the disturbances were commissioned nationally by the Home Office (Cantle, 2001; Denham, 2002; Ritchie, 2001), as well as locally (Clarke, 2002, commissioned by Burnley Task Force; Ouseley, 2001, commissioned by Bradford Vision). These reports explained, in varying degrees of detail, that the causes of the clashes included 'fragmented and polarized communities lacking a strong sense of civic identity and social values', 'mistrust and resentment among local communities' and 'the explosion of the many myths which lie close to the heart of the misunderstanding of each other' (Cantle, 2001; Clarke, 2002, p. 36; CRE, 2002a, p. 1; 2002b, p. 3; Denham, 2002; Ritchie, 2001). The Cantle and Denham reports formed part of a policy-oriented response to the incidents of 2001 in an attempt to 'focus on the lessons for national policy and practice' (Cantle, 2001, p. 5; Denham, 2002). This was due to a widely held belief that, far from being area-specific, such disturbances could quite easily have occurred in many other 'fractured' communities in the UK (Cantle, 2001, p. 6; Denham, 2002, p. ii). The

central recommendation of the Denham report is 'to make community cohesion a central aim of Government, and to ensure that the design and delivery of all Government policy reflects this' (Denham, 2002, p. ii). The Clarke report states that 'there is now a broad understanding that social exclusion or social disadvantage is a major cause of disaffection in communities, results in a lack of social cohesion and ultimately breaks communities down' (Ismail, 2001, p. 13, cited in Clarke, 2002).

It should be noted that these events of 2001 are not isolated incidents: according to Bagguley and Hussain, 'a moral panic...has been in the making for some time' (2006, p. 362) and Pearson argues that it is a myth that violence and disorder have ever been 'entirely foreign to the nation and its people' (1983, p. 3). Parallels have been drawn with the Brixton and Toxteth riots of 1981 (Bagguley and Hussain, 2006; Scarman, 1981). It could be argued that the difference between this and the events of 1981 is the government's reaction to the findings of the formal inquiries. The Conservative government of the time 'paid little heed' to Lord Scarman's report on the Brixton riots (Neal, 2003, p. 57). The current Labour government has used the findings from the riots to directly guide policy (Bagguley and Hussain, 2006): the DCLG recently published the Local Government White Paper which identifies the importance of supporting community cohesion in local areas (2006), and established the Commission on Integration and Cohesion in summer 2006.

3.3.1.3 Social cohesion, community cohesion and the neighbourhood

The overarching conclusion from the inquiries into the events of 2001 was that 'community cohesion', or better relations between communities (particularly ethnic and religious communities), was needed (CRE, 2002b, p. 4). Emphasis on the concept of 'community cohesion' is a direct response to the events in northern England: it is 'conceptualized as social cohesion at the neighbourhood level' because it is acknowledged that neighbourhoods (or communities) are made up of different communities within communities (Robinson, 2005, p. 1417). Whitehead points out that since coming to power in 1997, New Labour has adopted the neighbourhood as a spatial scale through which to develop social cohesion and to identify socially excluded communities (2003). He goes on to argue that, through numerous government schemes and initiative (such as Sure Start, the New Deal for Communities and the Neighbourhood Renewal Fund), 'the neighbourhood is providing the British government with a supple scale within which a flexible geography of state intervention can be legitimated and realized' (ibid., p. 280). While it is unclear whether the neighbourhood is an appropriate setting at which to apply the concept of community cohesion (Amin, 2002; Webster *et al.*, 2004), the neighbourhood has long been used as an appropriate scale for theoretical

examinations of social cohesion (Connerly, 1996; Keller, 1972; Park *et al.*, 1967; Young and Willmott, 1957; Jacobs, 1961), providing a basis to use it as an appropriate scale at which to conduct this research.

It is unclear why *social* cohesion has been largely replaced by *community* cohesion in policy documents: it may stem from the Cantle report which incorrectly identified a definition of social cohesion attributed to the Canadian government's Social Cohesion Network as a definition of community cohesion (2001, p. 69; Jenson, 1998, p. 4). Neither is there consensus on the validity of the concept 'community cohesion' which has been created out of another, 'social cohesion', and is based on one particular and dominant interpretation of particular events. While the then Housing Minister Keith Hill conceded that 'we all know that the causes of community conflict are wider than race and ethnicity', the ensuing government policies are arguably based on inaccurate, racialized readings of 'community', and of the events in 2001 (Bagguley and Hussain, 2006; Hill, 2004). Bagguley and Hussain suggest that other external factors are involved in the adoption of community cohesion-oriented policy, such as a New Labour focus on decentralising solutions to local problems to local communities, and critical events such as the London bombing of 7th July 2005 (Phillips, 2005; Bagguley and Hussain, 2006, after Back *et al.*, 2002). It is therefore more appropriate that social rather than community cohesion is the focus of this research.

3.4 Social cohesion and conceptual overlaps with related concepts

Some concepts in sociological theory and urban sociology theory are conceptually closely related to social cohesion: they include social capital, social solidarity, social exclusion and social inclusion. Overlapping aspects of these concepts have arguably resulted in confusion over their definitions and relationship to social cohesion. This is, in part, due to the interchangeable use of such concepts by theorists (Hirschfield and Bowers, 1997; Pierson, 2002), as well as differing interpretations of them (Forrest and Kearns, 2001; Hirschfield and Bowers, 1997; Putnam, 2000; Stafford *et al.*, 2003; Buckner, 1988). It is argued that a lack of consensus on definitions of concepts such as these can result in a loss of distinct meaning and their appropriation 'by policy pundits, to journalistic cliché, to eventual oblivion' (Portes and Landolt, 1996, p. 18; Forrest and Kearns, 2001). The following sections do not seek to provide an exhaustive list of definitions or an account of the inter-relationships between and among such concepts and social cohesion; rather they seek to discuss conceptual crossovers which occur.

3.4.1 Social cohesion and integration

In much of the literature the assumption that social cohesion brings affirmative social activity is reflected in the use of the term 'integration' within definitions of social cohesion. Integration is seen as a positive phenomenon, agreed by many theorists and policy-makers to have social benefits for residents (Granovetter, 1973; Hansen, 2003; Madanipour, 1998; Putnam, 1993; Smith, 1975; Talen, 1999). There is, however, variety in accounts of integration in using the term to describe the 'sticking togetherness' desirable in social settings (Gross and Martin, 1952, p. 553). Integration is defined by the Oxford English Dictionary as the 'bringing into equal membership of a common society those groups or persons previously discriminated against on racial or cultural grounds' (2005). Current UK government policy statements define social cohesion in terms similar to this with specific emphasis on racial integration (CRE, 2002a; Hansen, 2003). Roy Jenkins defines integration as 'equal opportunity, accompanied by cultural diversity, in an atmosphere of mutual tolerance' (1966, cited in Rose *et al.*, 1969, p. 25). Twine, discussing citizenship and social rights, argues that because of the importance of the wider community in which one lives, forms of social exclusion (i.e. where there is an absence of social integration) pose major threats to the development of the social self (1994, p. 11).

However, some theorists point out that too much integration can be an undesirable outcome and have negative impacts on society, resulting in the formation of close-knit and insular groups, sometimes exclusive in their membership (de Tocqueville, cited in Forrest and Kearns, 2001; Turok *et al.*, 2003). Granovetter questions this interpretation of the term by suggesting that integration is promoted, not by strong social networks and interaction, but rather by weak social ties which 'serve the function of bridging the diverse groups that typically comprise a neighbourhood' (Granovetter, 1973; Skjaeveland *et al.*, 1996, p. 416). Taking this a step further, Baumgartner, in his work on American suburbs, argues that it is possible for social cohesion to occur alongside 'a lack of social integration and relative indifference among people' (1988, p. 3).

Other theorists argue that integration is not a valid concept in the UK context; it does not account for groups that do not mix fully in neighbourhoods or communities because of intrinsic differences between groups (Nash and Christie, 2003). Hansen echoes this sentiment in his supposition that social cohesion and integration depend on the extent to which different groups 'feel or want to be integrated, and the extent to which they are regarded as welcome or integrated by the rest of the population' (Hansen, 2003, online publication). Integration may therefore not be possible in neighbourhoods where different ethnic, religious, and/or socio-economic groups with strong internal ties coexist

(Kellerman, 1981b; Nash and Christie, 2003). Somewhat ironically, this apparently negative breakdown of social cohesion arguably provided the impetus behind its restoration as a positive and desirable aim in a wider setting in the UK; a result of the 'northern town disturbances' referred to earlier (Acting CRE Chair Beverley Bernard, speech at a fringe event at the Labour Party conference, 29 September 2002).

It is argued elsewhere that integration is an inherently negative concept, 'the penultimate step en route to assimilation', which is 'imposed [by the state]...from without, rather than emanating from within' a community or neighbourhood (Ratcliffe, 2000, p. 171). For Bagguley and Hussain, 'integration', as defined in current policy, evokes memories of the failed assimilation policies of the 1950s and 1960s (2006; Robinson, 2005). The use of three terms – integration, absorption and inclusion – in the definition of social cohesion for the purposes of this research, and presented in Section 3.5.1, indicates the difficulty in pinning down a concept; discussed over a long period, and for which different (and sometimes now outdated) language has been used.

3.4.2 Social cohesion and social inclusion

According to Gray, 'an inclusionary society is a cohesive society' (2000, p. 23). He argues that social cohesion encompasses aspects of social inclusion such as 'a lack of widespread alienation and anomie' as well as 'an absence of marginalized and disaffected groups' (2000, p. 25). A considerable body of literature on social inclusion focuses on the need to remove 'economic and social barriers' to the material conditions for well-being in a society by providing 'fairer access to housing, education and health services' (Burton and Mitchell, 2006; Kearns and Turok, 2004; Turok *et al.*, 2003; Townsend, 1979, cited in Twine, 1994; Urban Task Force, 1999, p. 306; Parkinson *et al.*, 2006a), which relates closely to some accounts of social cohesion. This aspect is examined in this research in terms of accessibility to specific services and facilities possessed by residents in a neighbourhood; however, this accessibility is not encompassed in the definition of social cohesion established in this thesis. It is outside its scope to examine the level of accessibility to employment opportunities that residents possess because this research is primarily concerned with social rather than economic aspects of cohesion. Furthermore, it is not clear that access to employment contributes to social cohesion; it is argued elsewhere that equitable access to material conditions is more beneficial to social cohesion (Twine, 1994), in much the same way as is, for example the quality of the built environment. Other interpretations of social inclusion and social cohesion discuss structural mechanisms involved in the integration of different groups in neighbourhoods (Madanipour, 1998; Meegan and Mitchell, 2001). This aspect

of social inclusion, related to formal regulations and immigration policies, while linked conceptually by theorists and policymakers to social cohesion, is not within the scope of this research, as suggested in Section 3.3.1.

3.4.3 Social cohesion and social/ community stability

It is suggested by theorists and policy makers that social cohesion occurs where there is a well-established community of long-term residents (Hirschfield and Bowers, 1997; ODPM, 2005a; Silburn *et al.*, 1999). Hirschfield and Bowers describe population turnover as an 'indirect measure of social cohesion' (1997, p. 1277). In the literature, there is no consensus on the part that residential turnover plays in the social cohesion of an urban setting. Community stability, or low residential turnover, is regarded as a positive social quality which is jeopardized by high levels of social mobility (Goodchild and Cole, 2001; Keller, 1968; Power, 2004; Silburn *et al.*, 1999; Bramley and Morgan, 2003, cited in Turok *et al.*, 2003). Baumgartner, on the other hand, in his empirical study of an American suburb, found that such stability was not necessary for social order to prevail (1988; Forrest and Kearns, 2001). Because of this lack of agreement, the term 'ongoing' is included in the definition of social cohesion used in this research; it allows for different rates of residential turnover. 'Ongoing' is likewise included in the definition, because it also reflects the widely accepted idea of longevity inherent in sustainability discourse (Elkin *et al.*, 1991; ODPM, 2005a).

3.4.4 Social cohesion and social capital

The work of theorists such as Bourdieu (1986), Coleman (1988) and Putnam (1993) has contributed to the widespread use and discussion of the concept of social capital in academic and policy debates (Forrest and Kearns, 2001, p. 2137). Social capital has been described as 'social networks and the associated norms of reciprocity' (Putnam, 1993; Putnam, 2000, p. 21), and also refers to features of social organization including trust, the density and knowledge of relationships within networks; obligations and expectations; forms of local knowledge; and operating norms (Coleman, 1988; Pennington and Rydin, 2000, p. 234). These features are said to facilitate reciprocal actions and spontaneous cooperation (Putnam, 1993). Social capital is an intangible form of capital (or stock) which is unlike physical capital; it 'exists in the *relations* among persons' (Coleman, 1988, p. 101, author's italics). An assumption of social capital is that it is a resource 'whose supply increases with use' and depletes if not used (Putnam, 1993, pp. 167-9). Social capital is conceptually closely related to social cohesion in how the nature and extent of the former, the relations among residents, arguably have a direct

influence on the nature and extent of the latter, the ongoing integration of behaviours of residents in a given neighbourhood.

Social capital is therefore a well-documented concept and, like social cohesion, is employed to describe the social organization of different social settings at different scales, including individuals and families, communities and nations (Edwards *et al.*, 2003). Interpretations of social capital at the community or neighbourhood scale highlight the importance of particular social goods such as 'networks, norms and trust' which 'facilitate action and co-operation for mutual benefit', as well as 'participation in a range of voluntary associational activities' (Edwards *et al.*, 2003; Fukuyama, 2000; Mohan and Mohan, 2002, p. 194; Putnam, 1993, p. 35, p. 167; 2000).

However, like social cohesion, social capital is interpreted in different ways by theorists (Bourdieu, 1986; Coleman, 1988; Lochner *et al.*, 1999; Middleton *et al.*, 2005; Putnam, 1993). For example, it is argued by some that social capital describes the features of the social structure of a social setting, rather than of individual actors (Docherty *et al.*, 2001; Lochner *et al.*, 1999; Mohan and Mohan, 2002); others state that social capital occurs at the individual level and relates only to relations between people (Coleman, 1988; Kearns and Forrest, 2000). It is also argued to be an aggregate of resources (Bourdieu, 1986), although this has been contested (Portes and Landolt, 1996, p. 18).

The overlap between the two concepts suggests that it is difficult to separate them or to determine whether there is a causal relationship between them. Theoretical accounts state that the concepts are closely related, indicating that social capital should be incorporated into any definition of social cohesion (Forrest and Kearns, 2001; Kearns and Forrest, 2000).

However, social cohesion is also argued to be encompassed within the definition of social capital, indicating that it must be present for social capital to occur (Baas, 1997, cited in Middleton *et al.*, 2005) – people's behaviours must be integrated before, for example, social networks and trust can be built up among them. The differences between the two concepts are perhaps best illustrated where it is emphasized that social capital is directly achieved through civic participation, trust, and collective action (Putnam, 2000). Social cohesion arguably occurs when social order, as opposed to disorder or anarchy, is present, and can be supported by other social goods such as a civic culture, feelings of place attachment and safety, and social capital (Forrest and Kearns, 2001; Kearns and Forrest, 2000).

It has been argued that the interest in these concepts is due to a preoccupation with decreasing levels of social capital and cohesion, which, some sociologists suggest, indicate that 'the social cement of a previous era is crumbling and...we are being

collectively cast adrift in a world where the previous rules of social interaction and social integration no longer apply' (Forrest and Kearns, 2001, p. 2126; Edwards *et al.*, 2003; Amin and Tomaney, 1995). It is unclear when this 'golden age of traditional morality' and widespread social cohesion in the UK actually was; theorists often do not specify when a 'fall from grace' occurred (Pahl, 1991, p. 345). Pahl questions the basis of such assumptions arguing that there is a plethora of empirical research which undermines them (Gans, 1976; Pahl, 1991). Furthermore, as suggested in Section 3.4.1 (and also in Section 3.5), social cohesion, and social capital, may not be implicitly positive concepts (Coleman, 1988; Portes, 1998; Pahl, 1991); Portes suggests that social capital can lead to the 'exclusion of outsiders' and 'restrictions on individual freedoms' (1998, p. 17), and Coleman argues that it can reduce innovation and beneficial deviant actions (1988). The Dobu Indians are a commonly cited example; as a tribe, they achieved social cohesion via consensus based on 'the values of suspiciousness and treachery' (van der Berghe, 1963, cited in Mann, 1970). Amin discusses research into territoriality, which he recognizes as an agent of social cohesion among a limited number of people and/ or groups, and concludes that such territorial norms are commonly perceived as negative, because they can be based on antagonism (Amin, 2002; Ratcliffe, 2000; Suttles, 1972) although this is not always so (Al-Homoud and Tassinary, 2004). Other socially cohesive groups and communities could be 'public bads'; their foundations may be organized crime, prostitution and gambling rings and youth gangs, cited as examples of how 'embeddedness in social structures can be turned to less than socially desirable ends' (Portes, 1998, p. 18). Portes, in his discussion of social capital, argues that one important reason for outlining the negative consequences of social activity is 'to keep the analysis within the bounds of serious sociological analysis rather than moralizing statements' (ibid., p. 15). Having said all this, while both the definitions of social cohesion and social capital and the context within which they are said to occur are questioned, it is widely assumed in theory and policy that both concepts are positive and desirable social goods.

In this research, aspects of social capital are encompassed within the definition of social cohesion, with one caveat. Some aspects are not examined in arriving at a definition of social cohesion: these are forms of local knowledge and operating norms (Pennington and Rydin, 2000, p. 234). It would be very difficult to collect and assess them in the particular neighbourhoods in which the research is taking place; no prior knowledge of these neighbourhoods was assumed. Furthermore, it would be difficult to assess the nature and validity of operating norms which may differ among residents. For this reason those aspects of social capital relating to trust, reciprocity and social networks are included in the definition of social cohesion.

3.4.5 Social cohesion and community cohesion

Social cohesion and community cohesion are very closely related (Webster *et al.*, 2004), since the latter is arguably coined from the former (after Cantle, 2001). There seems to be very little to distinguish the concepts except in two related respects: firstly, social cohesion is applied to a variety of scales and settings, including society, the city, as well as the neighbourhood and community. Community cohesion on the other hand is applied on local scales such as the neighbourhood and community. The second relates to assumptions in the definitions of both concepts. Community cohesion specifically refers to cohesion between different (ethnic) communities by referring to 'participation...taking place across communities [within the same spatial setting], knitting them together into a wider whole' (Robinson, 2005, p. 1417). However, it has been pointed out that social cohesion is also a local phenomenon, and that on a wider (e.g. city) scale, there may appear to be fragmentation, if there are, for example, numerous close-knit, insular communities within a given physical setting (Granovetter, 1973, p. 1374).

A difficulty with both concepts – when they are applied to the social setting – arguably hinges on whether or not a definition of community is spatially based. An implicit assumption of social cohesion however is that a community *can* be spatially based, something akin to a neighbourhood. There is no consensus on whether community *can* and *must* refer to the physical setting of a specific geographical area, but it is commonly used in such a way (Davies and Herbert, 1993 , p. 1; Dear and Wolch, 1989; Janowitz, 1978; Jenks and Dempsey, forthcoming, 2007; Galster, 2001; Hallman, 1984; Keller, 1968; Suttles, 1972). Community cohesion makes no such assumption, using 'community' as an umbrella term to describe the familiar social, but not physical, arrangements one has beyond the home (Crow and Allan, 1994, p. 1). A 'community' is said to be subject to a homogeneous value system, requiring interdependence between members (Greer, 1991 and Cohen, 1987, both cited in Crow and Allan, 1994) and 'encompasses all forms of relationship which are characterized by a high degree of personal intimacy, emotional depth, moral commitment, social cohesion, and continuity in time' (Nisbet, 1966, p. 47). 'Community' is also argued to be a value-laden term associated with norms and rules adhered to by, and through the social networks between, its members (Giddens, 1993, p. 115; Granovetter, 1973, p. 1376). Having said this, theoretical accounts, and in particular policy documents, identify the neighbourhood as an important setting for community cohesion, where communities overlap and co-exist (Cantle, 2001; CRE, 2002a; Amin, 2002; Home Office and ODPM, 2004). This indicates that both social and community cohesion are considered to be significant at the

neighbourhood level, though not necessarily spatially synonymous with neighbourhood (Webster *et al.*, 2004; Ferlander and Timms, 1999).

For the purposes of this research, social cohesion rather than community cohesion is the term employed. This is for three reasons. Firstly, social cohesion is a concept which has been examined more rigorously than the latter. Secondly, community cohesion assumes that different groups live in any one neighbourhood, and, given the background to the formulation of the concept, that different ethnic groups live alongside each other. This assumption, the focus of government policy, arguably does not accurately describe all neighbourhoods in the UK: that is to say, there are neighbourhoods which are populated by one ethnic group (Phillips, 2005). Finally, social cohesion can account for people's feelings of attachment and belonging to an area, whereas the definition of community cohesion omits any such territorial belonging or sense of identity. For these reasons, social cohesion, rather than community cohesion, is adopted for the purposes of this research.

3.5 Social cohesion and its antecedents

The previous sections have outlined the breadth of sociological thought that social cohesion encompasses and have provided a comprehensive examination of how the concept has been used to describe social relations in social settings. The discussion now focuses on the definition employed for the purposes of this research, and considers those dimensions of social activity which are argued to contribute to social cohesion.

There is an assumption in much of the literature that social cohesion is an outcome of particular types of social activity and behaviours (Giddens, 1978; Stafford *et al.*, 2003; Turok *et al.*, 2003) and that social cohesion increases in a linear fashion as conditions are cumulatively met. It is also argued that social cohesion is an ongoing process rather than an outcome (Government of Canada, 1996, cited in Cantle, 2001). Chan *et al.* however, argue that social cohesion is not a process. That would point to 'some "end-state" or "maximal" level of social cohesion', whereas it should be used to describe a state of affairs (2006, p. 281). This suggests that a more appropriate description is that social cohesion is an ongoing process. This indicates that perceived negative aspects of social activity and behaviour (such as deviance, non-compliance and anti-social behaviour) can be accounted for as well as positive, suggesting that social cohesion is a term that can be used to describe the state of social activity in any given area (Amin, 2002; Forrest and Kearns, 2001; Giddens, 1993).

The introduction of the concept of 'community cohesion' touches on the darker aspects of social cohesion, because it was developed in reaction to the violent clashes

between what was seen by UK policy-makers to be too-strongly-knit and insular communities. As the previous sections outlined, it is currently recognized in policy that groups and/or individuals who are well integrated into local ethnic, religious-based or place-based communities may create divisions between these communities and others (Kearns and Forrest, 2000; Kelly, 2006). Furthermore, accounts of social cohesion show that it can also arise from norms and values that may lead to conflict rather than cohesion on a greater scale (Baumgartner, 1988; Fischer *et al.*, 1977; Mann, 1970). It is therefore necessary that any comprehensive examination of social cohesion accepts the negative consequences of an apparently benign concept (Fischer *et al.*, 1977, p. 8).

3.5.1 The definition of social cohesion used in this research

The following sections outline the dimensions of, or particular manifest or latent social activities encompassed by, the concept of social cohesion defined below. The full definition of social cohesion employed for the purposes of this research is:

the ongoing integration (or absorption/ inclusion) of individual behaviours in a social setting (here, the neighbourhood) which is achieved through:

- **relatively high levels of social interaction**
- **a multiplicity of well-defined social networks, including networks of mutual support**
- **a sense of community in terms of social order and common norms**
- **participation in organized activities, including formal and voluntary organizations**
- **trust and reciprocity**
- **feelings of safety**
- **a sense of place attachment**

This definition has been adapted from a definition provided by Jary and Jary (1991) as well as from research by Forrest and Kearns (1999; 2001) adapted by policymakers among others (Cantle, 2001; Local Government Association (LGA) and Home Office, 2002). It encapsulates the multi-dimensional nature of social cohesion (after Kellerman, 1981a), acknowledging its use in the literature as 'an umbrella term for related, but separate [social] constructs' (Stafford *et al.*, 2003, p. 1472). The definition adopted for this research encompasses specific social activity and behaviours said to occur in neighbourhoods, both manifest and latent. Their specific nature precluded them, on the whole, from the broad conceptual discussion of the concepts in the previous sections. They are therefore discussed in detail, in some cases for the first time, in the following sections.

The different reasons for not including dimensions of social cohesion such as equitable access to employment, formal regulations, and material deprivation have

already been discussed (Section 3.4.2). A further associated dimension is tolerance. It is argued that a degree of tolerance will always be required by any resident living alongside others in urban areas (Williams *et al.*, 1996, p. 91) and that tolerance of other lifestyles and cultures is necessary for social cohesion to occur (Cantle, 2001; Stafford *et al.*, 2003). Tolerance is arguably implicit in definitions of integration and social cohesion; an integration of behaviours must involve some level of tolerance of different behaviour types (Office of the Deputy Prime Minister, 2005a; Putnam, 1993). However, it has been argued that tolerance of diversity can manifest itself in isolated communities (Phillips, 2005); it can be achieved without other fundamental dimensions of cohesion such as social interaction among groups and communities, and mutual trust. The definition of social cohesion used in this research does not explicitly identify tolerance as a dimension, but attempts to capture it in its latent forms through indicators employed to measure social interaction, mutual trust and reciprocity, social networks and sense of community. The following sections examine the individual dimensions of social cohesion in more detail.

3.5.1.1 Social interaction

Wirth describes social interaction as 'the basic process in the formation both of human nature and of the social order' (1964, p. 17), and a cohesive society is said to 'hang together', in part, through social interaction (Hirschfield and Bowers, 1997; Turok *et al.*, 2004, p. 21). Forrest and Kearns describe social cohesion, in part, in terms of a high degree of social interaction, suggesting that a low degree would contribute to its lack in a given social setting (2001, p. 2128). The integration of individual behaviours is argued to be partly achieved through residents interacting with one another, getting to know neighbours and finding out about the social norms that are in place, such as keeping one's garden at a certain level of tidiness (Putnam, 2000). Without social interaction, people living in a given area can only be described as a group of individuals living separate lives, with little sense of community or sense of pride or place attachment.

This line of argument, however, has the underlying assumption that all social interaction is positive and the social cohesion to which it contributes is also positive. There are of course social interactions of a negative type that may affect the nature of social cohesion in a neighbourhood (Baumgartner, 1988; Forrest and Kearns, 2001; Skjaeveland *et al.*, 1996). Such social interaction may include annoyance, disturbance, avoidance or simply a preferred lack of interaction (Skjaeveland *et al.*, 1996). There is therefore a strong case for incorporating indicators which measure negative forms of social interaction into an operationalized definition of social cohesion, even though some

theorists define social interaction as a wholly positive social attribute (Buckner, 1988; Raman, 2005).

It is argued that social interaction is one of several dimensions of social cohesion: Smith states that studies which concentrate on social interaction in isolation as a measure of cohesion 'only partially measure cohesion' (Smith, 1975, p. 145). Theoretical accounts discuss the increase in social interaction that can result from relatively high levels of interaction between people in a neighbourhood in the form of increased opportunities for social networks and friendships to be established (Nash and Christie, 2003; Baumgartner, 1988). Social interaction is also said to give residents the opportunity to communicate not only with one another, but to discuss issues, problems and ideas within a community context, leading to more active community participation and also a greater sense of community in a neighbourhood (Fischer, 1976; Putnam, 1993; Talen, 1999). Alongside these other social constructs, social interaction is therefore argued to contribute to social cohesion in a neighbourhood.

Measures of social interaction are commonly incorporated into examinations of social cohesion (Buckner, 1988; Chan *et al.*, 2006; Lev-Wiesel, 2003; Stafford *et al.*, 2003). It should also be noted that, while social interaction takes place irrespective of neighbourhood boundaries (Forrest and Kearns, 2001), this research is focused on social cohesion within a given area, which is why measures of social interaction relate specifically to that taking place within a spatially defined neighbourhood.

3.5.1.2 Social networks

Does social interaction take place as a result of social networks, or do social networks come about because of social interaction? While the distinction between the two is not of import for this research, this question succinctly illustrates their close relationship. According to Forrest and Kearns, a socially cohesive neighbourhood is one in which people know one another (1999). This is a rather general assumption, and does not take into account the nature and strength of the relationships that people have with one another. Fukuyama defines networks as 'a group of individual agents who share *informal* norms or values', which, for the purposes of this research, exist within a given area (2000, p. 199). Such social networks can range from weak, such as recognising someone by sight, to strong, including close friends and family. It is argued that weak networks or ties can be as important as strong ties, particularly in relation to the size and nature of a neighbourhood, as well as providing a variety of social opportunities (Granovetter, 1973; Putnam, 1993; Skjaeveland *et al.*, 1996). It is therefore more accurate to state that a multiplicity of different types of social network, including networks of mutual support, can contribute to social cohesion in a neighbourhood, than simply to state that people ought

to know each other. While extra-local social networks are 'increasing and becoming more dissociated from forms of local interaction', there is still a strong contingent in urban sociology literature which maintains that the neighbourhood is 'a social arena which continues to perform an important...role' (Forrest and Kearns, 2001, p. 2133; Talen, 1999; Stafford *et al.*, 2003).

Fischer argues that social networks 'have been discovered to be "social support systems" indicating that the people we know and feel we can depend on can influence other aspects of life such as feelings of safety and sense of well-being' (Fischer, 1982, p. 3; Pierson, 2002; Turok *et al.*, 2003; Walker and Coulthard, 2004). While Fischer concedes that some 'enthusiasts have overstated the supportiveness of networks', it is argued that such social, and mutual, support is integral to people's values and identities as well as to civic society (Fischer, 1982, p. 3; Raz, 1986, cited in Gray, 2000; Putnam, 1993). Fischer also points out that difficulties are encountered in research dealing with social networks and that a simple count of people's social networks is insufficient (Fischer, 1982, p. 56) because an assumption cannot be made that people with more social networks are necessarily more sociable than those with fewer. The nature of those networks is important to bear in mind. This refers back to the different kinds of social ties that people have with each other (Henning and Lieberg, 1996). For this reason, a multiplicity of social networks, leaving room for differences in the nature of such ties, is adopted in this definition of social cohesion.

3.5.1.3 Sense of community

Hirschfield and Bowers identify a 'strong sense of community' as a fundamental necessity for social cohesion (Buckner, 1988; Hirschfield and Bowers, 1997, pp. 1275-6). 'Sense of community', for the purposes of this research, relates specifically to social order, common norms and to a lesser extent, civic culture (Kearns and Forrest, 2000). Fukuyama states that there is a direct and positive relationship between norms and values and the sense of community: 'the deeper and more strongly held these common values are, the stronger the sense of community is' (Fukuyama, 2000, p. 15). According to Talen (1999), 'sense of community' can be defined as an amalgam of shared emotional contact through interaction with others, place attachment, a sense of membership in terms of feelings of having a 'right to belong', and a degree of influence over others and meeting mutual needs of people (p. 1370). This sense of community is closely related to the social dimensions of cohesion, arguably leading to increased community participation, a potentially diverse variety of social networks, and greater levels of trust and reciprocity between people. A sense of community arguably contributes to, or manifests itself in, a common civic culture where common aims can be tabled, supported, and achieved, as

well as in a common social order, through common norms and codes of behaviour (Kearns and Forrest, 2000) such as an unwritten rule about tidy gardens mentioned above (Section 3.5.1.1).

While it has been argued that social cohesion 'implies a degree of social order or an absence of conflict, unrest and social disorder', it is claimed that such social order can also manifest itself as apathy rather than as a strong sense of community or participation in community activities (Turok *et al.*, 2003, p. 46). This distinction should be accounted for in research focused on social cohesion, because, as has been suggested, social cohesion may not be formed around positive social activity alone.

3.5.1.4 Participation in organized activities

Participation in organized activities is cited as a necessary dimension of social cohesion, because it is a way in which the absorption of active individual behaviours in a social setting manifests itself – be it attendance at a neighbourhood group opposing the erection of a mobile phone mast in the neighbourhood or regular participation in a sports team on the local green space. Participation in organized activities also relates closely to sense of community, since it too taps into the associated concept of civic society: measures of 'civic sociability' and civic culture often include participation in organized activities (Etzioni, 1995; Putnam, 1993). These measures also include political participation (Kearns and Forrest, 2000), such as electoral turnout (Putnam, 1993) even though it has been argued that 'in some respects voting is not a typical mode of political participation', because it is participation in an undemanding form (Putnam, 2000, pp. 35-7). It is also unclear how robust a measure of participation voting is, in light of research which finding that urbanism can affect voter turnout: Fischer reported that 'as size of community increases, voter turnouts for local elections drop off, but turnouts for national elections increase slightly' (1976, p. 104). It is questionable whether this applies to voting patterns in the UK today. Furthermore, voting is not a regular occurrence, and therefore is arguably not a strong indicator of participation in activities in a neighbourhood.

It should not be a foregone conclusion that if participation in organized activities in a neighbourhood occurs, particular groups of people can be labelled as socially cohesive. People have many and different types of social network, both within and outside the neighbourhood, which may mean that they cannot participate regularly in such activities. Furthermore, people may not have a propensity or desire to participate (after Keller, 1968). While there are claims to the contrary (Skidmore *et al.*, 2006), it is clear that participation in organized activities is considered to contribute to social cohesion. This discussion does illustrate that the more dimensions of social cohesion are involved, the more complex diagnosis of presence of social cohesion can become.

3.5.1.5 Trust and reciprocity

Nash argues that trust is an integral component of social cohesion – trust must be built up not only to improve the conditions for social interaction and social networks, but also to create a shared sense of community and potentially increase the chances of participation (Fukuyama, 2000; Levitas, 1998; Nash, 2002; Turok *et al.*, 2003). Putnam examines this relationship from the reverse angle. He states that networks of community engagement foster sturdy norms of reciprocity. A society characterized by generalized reciprocity is argued to be more efficient than a distrustful society (2000, p. 20). In previous work on social capital, Putnam argues that the more reciprocity and trust there is in a community, 'the more civic that community may be said to be' (1993, p. 88) Norms of trust and reciprocity are ingrained in social networks and networks of civic engagement: Putnam further argues that those residents engaging in such interaction within the neighbourhood 'are apt to develop strong norms of acceptable behaviour and to convey their mutual expectations to one another in many reinforced encounters' (1993, p. 173; Walker and Coulthard, 2004).

It is argued that the nature of trust and of reciprocal relationships in post-industrial society is different from that in traditional (and, to a point, industrial) society because of the feelings of insecurity and anonymity that it has generated (Body-Gendrot, 2000, p. 242). This is said to be linked to Baumgartner's idea of 'moral minimalism', based on weak and fluid relationships between neighbours with minimal information about each other, and so is 'a relationship that hardly exists' (1988, p. 13). It is argued that such weak bonds of trust between people result in 'the replacement of neighbours or friends by acquaintances or strangers', and in avoidance and no contact as significant forms of social interaction (Baumgartner, 1988; Body-Gendrot, 2000, p. 242). While, according to some theorists, the nature of trust may have changed recent theoretical accounts continue to cite it as an important antecedent of social cohesion (Forrest and Kearns, 2001; Stafford *et al.*, 2005).

3.5.1.6 Feelings of safety

The perceived safety of a neighbourhood is said to be a fundamental part of social cohesion, even though commonly it is not discussed as such. Feelings of safety tend to be dealt with as a separate aspect of social life (Cantle, 2001; Walker and Coulthard, 2004), or, by some, as a component of social capital (Body-Gendrot, 2000; Forrest and Kearns, 2001). In its definition of social cohesion, the House of Commons Committee likened perceived safety to Maslow's 'hierarchy of needs', with fulfilment of basic needs required before social cohesion can be achieved (House of Commons, 2004; Maslow, 1943; 1954). In this way, it is a prerequisite for any positive social activity in a

neighbourhood (Barton *et al.*, 2003; CABE and DETR, 2000; Shaftoe, 2000; Talen, 1999). Feelings of safety, in the context of social cohesion, relate primarily to social order in the neighbourhood, and its supportive role for other dimensions of social cohesion. Without crime, or disorder, in a local area residents can feel secure in their social interactions with other people and participate in activities. It is argued that people 'hate to feel unsafe or to live in an unsafe place' and that most simply want reassurance that they have nothing to fear from their neighbours (Nash and Christie, 2003, p. 15; Shaftoe, 2000, p. 231). Such feelings of safety arguably enhance trust and reciprocity between residents and contribute to the sense of community and sense of place in a neighbourhood.

This dimension of social cohesion is also important because it is the only dimension which must be positive in nature. While the other dimensions can be negative in a given neighbourhood and social cohesion may yet occur, it is a fundamental requirement of all people to feel safe in their living surroundings (Home Office, 2005; ODPM, 2002; 2005a). While this appears to contradict the earlier discussion of how social cohesion can encompass social activity which might be positive and/or negative in nature, perceived safety is an important and basic requirement that all people should have (Shaftoe, 2000; Sime, 1988). For this reason, the presence of safety in a neighbourhood, rather than the lack of it, creates feelings of safety within the definition of social cohesion.

3.5.1.7 A sense of place attachment

'Sense of place attachment' is a concept that has its foundations in the writings of Aristotle who viewed 'place' as the '"where" dimension in people's relationship to the physical environment' (Abu-Ghazzeh, 1999, p. 46). It is argued by many that 'physical setting, activities and meanings are always interrelated' (Carmona *et al.*, 2003; Dear and Wolch, 1989; Gehl, 2001; Lynch, 1960; Rapoport, 1977; Relph, 1976, p. 48; Soja, 1980). This dimension of social cohesion is dependent on its physical built form insofar as it affects residents' sense of attachment to the place. Relph states that 'to be inside a place is to belong to it and to identify with it, and the more profoundly inside you are the stronger is this identity with the place' (1976, p. 49). A positive sense of attachment to a place is considered a dimension of social cohesion because it is an integral component of people's enjoyment of the neighbourhood in which they live (Nash and Christie, 2003). This dimension of social cohesion is related to the quality of the built environment, since it is claimed that such feelings can be affected by the perceived quality of that place (ibid.;Talen, 1999). For example, if a place is visibly under-maintained showing high levels of litter and vandalism, this might affect people's sense of attachment to that place considerably; they may not be able to easily identify with a place that does not feel looked

after (Nash and Christie, 2003, p. 47). This could then have a detrimental effect on feelings of safety, which might in turn reduce levels of social interaction and community participation (ibid.). Sense of attachment to a place is also inextricably bound up with the concepts of belonging and territoriality; Forrest and Kearns argue that the importance of the urban form cannot be underestimated in relation to one's sense of identity and belonging (2001, p. 2130). The built environment and the sense of attachment to a place that people have of that built environment are shared by residents of a particular neighbourhood, and together create its 'own order, its special ensemble, which distinguishes it from the next place' (Relph, 1976, p. 2). Like the other dimensions of social cohesion (excluding safety), a sense of place can be negative as well as positive. To capture the possibly differing interpretations of sense of place, use of multiple indicators will be considered.

3.6 Conclusions

Social cohesion is a complex and intricate concept, discussed and examined by many theorists in different contexts and at different scales. This chapter has underlined this complexity by identifying the closely related concepts alongside which social cohesion is discussed and for which it is sometimes substituted. This chapter has provided a review of the extensive literature on relevant concepts and contributes to theoretical debates by defining social cohesion as experienced at the scale of the neighbourhood. This also involved the identification of dimensions of social cohesion sensed and felt by neighbourhood residents. These dimensions highlight that social cohesion relates not only to social dimensions of everyday life, but also to its spatial setting, specifically residents' sense of attachment to a place. This multi-dimensionality is reflected in the seven specific inter-connected dimensions of social cohesion which might also be considered antecedents. The dimensions to be measured to capture positive as well as negative social activity are listed below:

- **Social interaction**
- **Social networks, including networks of mutual support**
- **Sense of community in terms of social order and common norms**
- **Level of participation in organized activities**
- **Level of trust and reciprocity**
- **Feelings of safety**
- **Extent of a sense of place attachment**

While the review of the literature provides a definition of the concept of social cohesion as experienced at the neighbourhood scale, a further stage of operationalization is required, using the dimensions identified as the foundation for a series of indicators measuring social cohesion in a given neighbourhood. Establishing such indicators permits the researcher to examine claims that a relationship exists between the quality of the built environment and social cohesion. Chapter Four outlines the overall methodological approach developed for this research.

Chapter Four

Methodology

Chapter Four – Methodology

4.1 Introduction

Many practitioners and prescriptive theorists discuss the benefits of high quality built environments, but without rigorous empirical evidence to support their views (Llewelyn-Davies, 2000; Urban Task Force, 1999). There is a need to investigate in detail the influence of the built environment on the social cohesion of urban residents, especially in light of recent government policy which focuses on sustainable neighbourhoods and communities. Such policy makes the assumption that social cohesion is present, to some degree at least, in urban areas, and can be positively harnessed and supported, in part through the built environment, for the benefit of those who live there. This assumption has little supporting empirical evidence, and without further understanding of the relationship between the built environment and social cohesion, such policy may be rendered ineffective. The underlying aim of this research is to address this gap in empirical research by determining the nature and extent of the relationship between the features that constitute a high quality built environment and social cohesion. To achieve this aim, the concept of quality in the context of the built environment is operationalized into a series of measurable data and indicators. To state that high quality built environments have more social benefits, or support more social cohesion, than do low quality built environments might be self-evident to some theorists; however, difficulties lie in determining what exactly in the built environment constitutes high quality.

Further, there is also a need to operationalize the concept of social cohesion into measurable indicators. It is difficult to ascertain at exactly what point theorists and policy makers decide that a collective of people (say, neighbours) is acting in *too* cohesive a manner, or, at the other extreme, stops acting cohesively. While it is outside the scope of this research to identify at what point social cohesion does or does not occur, socially cohesive (and un-cohesive) activity is measured and examined in the context of the neighbourhood. The problem of achieving an agreed definition of 'neighbourhood' for empirical research highlights the difficulties inherent in translating theory into empirically observable boundaries. This chapter sets out the methods and analyses employed to achieve the research aims.

Having established the features of quality in the built environment and the dimensions of social cohesion, examined in Chapters Two and Three, the next stage is to identify a set of methods and analyses which best achieves the research objectives. The overall methodological approach is presented, with a discussion of specific practical issues arising, and alternative methods of data collection and analysis, where applicable. The

specific components of the methodology adopted are then examined in further detail, with focus on the following aspects of the research:

- The overall methodological approach: a large-scale cross-sectional investigation employing a combination of quantitative and qualitative research methods
- The operationalization of features of quality of the built environment and dimensions of social cohesion: the development of indicators
- The method of sampling: residents in six neighbourhoods
- The methods of data collection: including physical site survey, household survey, semi-structured interview
- The methods of data analysis: including descriptive analyses, correlations, regression analysis and content analysis

4.2 The overall methodological approach

The aim of methodology is to provide the researcher with the best, most suitable set of methods and analyses to achieve the research objectives. The research objectives, as set out in Chapter One, are as follows:

- To establish whether there is a relationship in English neighbourhoods between features that constitute high quality in the built environment and social cohesion
- To investigate the nature and extent of the relationship if it does exist
- To identify the features of high quality in the built environment in England that are most likely to support social cohesion in its neighbourhoods

The features considered to constitute a high quality built environment have been presented (Chapter Two), and a definition of social cohesion has been established for the purposes of this research (Chapter Three). To achieve the three research objectives listed above, it was necessary to conduct an empirical investigation. This empirical investigation contributes to the existing body of literature on the relationship between the built environment and social activity, and addresses the gap in knowledge relating to the quality of the built environment and its claimed relationship with social cohesion. An empirical examination was judged to be the most appropriate methodological approach because of the nature of the research questions and the subjects under study. The definitions of social cohesion and the features of high quality in the built environment established for this research are not those used to inform existing empirical research, but are the outcome of winnowing it.

A very limited amount of the data required for this research is available through secondary datasets, such as the UK Population and Housing Census, the Survey of English Housing, or in work conducted by researchers using, for example, neighbourhood cohesion indicators (e.g. Buckner, 1988). Hence, these existing datasets are insufficient to provide the totality of necessary data. This is for two reasons. Firstly, the primary requirement of this research is to gather data on the features of quality of the built environment and of social cohesion, both defined to meet the purposes of this research. This task has not been conducted before, and so requires original research methods and indicators. The second reason relates to the scale of the study which is the neighbourhood, a setting often used in empirical research. This is, in the first instance, a problematic concept about which no consensus on its definition for use in empirical research exists (Galster, 2001; Jenks and Dempsey, forthcoming, 2007; Kearns and Parkinson, 2001). The definitions used hitherto do not consistently correspond with administrative boundaries such as output areas, wards and postcode sectors, which are often used in national datasets but may have little bearing on how the neighbourhood is identified by its residents (Jenks and Dempsey, forthcoming, 2007). The multivariate investigation employed in this research builds on recent work on the translation of theoretical definitions of neighbourhood into practice for empirical research (ibid.), and is discussed in more detail in Section 4.3.

Overall, the methodology adopted for the research is mainly quantitative; however, there are qualitative components employed in indicators measuring both the quality of the built environment and social cohesion. The combination of qualitative and quantitative methods is common in social sciences (Docherty *et al.*, 2001; Goodchild and Cole, 2001; Stafford *et al.*, 2003). The research stratagem uses deductive reasoning, common in social sciences research. Essentially it is the deduction of a hypothesis (or set of hypotheses), arising from existing theory as well as from practice and policy, and which is then 'subjected to empirical scrutiny' (Berg, 2004; Bryman, 2001, p. 8). Employing this approach, rather than conducting an inductive study where theory is the outcome of the empirical research conducted, better suits this research, as it tests claims about the effect of the quality of the built environment on social cohesion made in previous studies. To first collect data to 'establish the conditions in which a theory will and will not hold', as do inductive techniques, is not appropriate here (Bryman, 2001, p. 8).

There are two main reasons for adopting a combination of quantitative and qualitative research methods for this research. Firstly, it is a well-used method of data triangulation (Berg, 2004; Docherty *et al.*, 2001). Triangulation uses 'more than one method or source of data in the study of social phenomena' (Bryman, 2001, p. 274; Frankfort-Nachmias and Nachmias, 1996). It is argued that triangulation offers the researcher 'a better, more substantive picture of reality; a richer, more complete array of symbols and theoretical

concepts; and a means of verifying many of these elements' (Berg, 2004, p. 5; Fielding and Fielding, 1986, in Berg, 2004; Miles and Huberman, 1994). While triangulation has been used in exclusively quantitative or qualitative research strategies, Deacon *et al.* point out that 'many writers have stretched the notion of triangulation to cover the cross-checking of findings through the use of both quantitative and qualitative research' (1998, p. 48). And secondly, it is argued that a multiple-method approach provides data rich in detail and can help to develop analysis (Bryman, 2001; Rossman and Wilson, 1985). Pole and Lampard point out that while multi-method research can be time-consuming, it has benefits because 'research which uses complementary forms of data...possesses an extra dimension' (2002, p. 31).

The research design adopted in this research is cross-sectional, which is suitable as it focuses on the variation in variables and the associations between them (Bryman, 2001). This design was selected over an experimental or longitudinal study approach because of time and cost constraints and its applicability to the measurement of the built environment. A cross-sectional, or social survey, research design provides a '"snapshot" approach where data are collected at one point in time' (Gray, 2004, p. 31). This approach does however have limitations: while it can 'reveal associations among variables' it cannot reveal causation (ibid., p. 82). This is because there is 'no time ordering to the variables because the data on them are collected more or less simultaneously' (Bryman, 2001, p. 41). If a relationship is discovered between two variables, it cannot be described with any certainty as causal because the approach does not employ features of an experimental design, which include a control group (ibid.). This limitation is taken into account here and 'the possibility that the real pattern of causal direction is opposite of that which is anticipated' is also considered (ibid., p. 226). Controlling for intervening, or interfering, influences is therefore also a difficulty in cross-sectional design; this is addressed in this research as such influences are measured and their associations with social cohesion are examined alongside the features of quality of the built environment.

4.3 Development of the indicators

To test the claims that the quality of the built environment has a relationship with social cohesion, it is necessary to measure the two overall concepts. An effective way of achieving this is through the development of indicators to operationalize the theoretical definitions of the quality of the built environment and social cohesion established for this research (Bryman, 2001). The use of indicators is well-established in social science and built environment research, practice and policy (Krause, 2006; Ellaway *et al.*, 2001; Harpham *et al.*, 2002; Bollen and Hoyle, 1990; Buckner, 1988; Burton, 2002; Burkhardt,

1971; ODPM, 2005b; 2005c; DETR, 1999; 2003). Indicators allow the researcher to make assessments 'using limited, representative information' as well as providing a consistent device for identifying the differences between 'people in terms of the characteristic in question' and 'more precise estimates of the degree of relationship between concepts' (Bryman, 2001, p. 66; Burton, 2002, p. 228). However, Burton draws attention to 'potential pitfalls' in the use of indicators; these need to be acknowledged and avoided (ibid.). Green and Champion (1991, p. 1398) point out that:

> there is no recognized common practice to which to turn when selecting indicators for analytical use. Hence current practice may be described as ad hoc and piecemeal: there are nearly as many approaches to selecting indicators as there are different studies, leading to inconsistencies in treatment over space and through time.

It is argued that pragmatic considerations particular to the research play a major role in the selection process of indicators (Burton, 2002; Green and Champion, 1991), and, according to Coombes and Wong, the value and practicability of potential indicators can be assessed according to five criteria (1994, p. 1304). The availability of the data required is cited as perhaps presenting the most fundamental problem that can restrict the development of indicators because it directly influences the possibility of including a particular indicator. Closely linked to this is the geographical specification of the data, and the time-series prospects, which relate to the geographical coverage of secondary data and how up-to-date that data are. Coombes and Wong advise that potential indicators should be assessed according to how easily implemented they may be, and finally, and most importantly, how those indicators are to be interpreted. Keller points out that interpretation of data on neighbourhoods depends on 'observed data whose quality and utility is in turn dependent on the sources of information consulted and the techniques used to obtain it' (1968, p. 12). This interdependent relationship between the data, the data sources and their interpretation is critical for the research, whether dependent on primary or secondary datasets. Bryman states that the reliability and validity of indicators as representations of concepts is crucial to research (2001, p. 69). For an indicator to be valid, it must 'reflect the condition or experience...[it is] supposed to represent' (Burton, 2003, after Coombes and Wong, 1994). The methodology requires that a large quantity of primary data is used in the research. This involves careful thought and consideration in translating the theoretical concepts into sets of multiple operational indicators. The subjective nature of the concepts under scrutiny required that the indicators, in the first instance, 'reflect[ed] the content of the concept in question', known as 'face validity' (Bryman, 2001, p. 72). Methods of establishing face validity are essentially intuitive and

can involve consulting people with experience and expertise in a particular field (ibid.). Furthermore, a reliable indicator consistently reports the same phenomenon or concept in the same way (Bryman, 2001; Burton, 2003). Tests of reliability include Cronbach's alpha and, where appropriate, error matrices and Cohen's kappa (Remote Sensing GIS Laboratories, 2003).

4.3.1 Multiple-indicator measures

To measure a concept in as reliable and valid a manner possible, multiple-indicator measures are often used in social sciences research (Bryman, 2001). The choice to use more than one indicator is made because a single indicator may capture only part of the concept under scrutiny or be of too general a nature to measure the concept sufficiently (Bollen and Hoyle, 1990; Bryman, 2001, p. 67). For example, a single indicator addressing the concept of social interaction in the neighbourhood, which asks how many neighbours respondents go out with socially, would not be sufficient to measure social interaction fully because it takes no account of respondents' interaction with friends and family in the neighbourhood, only with neighbours, nor with other types of interaction, such as greeting or avoiding neighbours. Skjaeveland *et al.* argue that a multidimensional measure increases 'the understanding of the dynamics of neighbourhood social life' (1996, p. 415). Using a set of indicators to tap into a particular concept also avoids the problems that can be encountered when relying on a single indicator (Bryman, 2001).

The indicators created through the operationalization of the concepts of quality of the built environment and social cohesion were applicable at a range of scales. Tables 4.1-4.2 show the specific indicators employed to measure each component, or dimension, of the two concepts and the scale at which the indicator is relevant. Table 4.3 lists the indicators which were developed to capture the effect of intervening influences which may also affect the extent of social cohesion in a neighbourhood. A full explanation of the rationale for choosing these indicators is given in Chapter Five.

Having established the indicators as operationalizations of theoretical concepts, and the scale at which the indicators are relevant, the following sections outline the sampling process involved in determining to whom and where the primary data collection is targeted.

Table 4.1 Features of quality of the built environment indicators

Feature of quality	Nature of indicator(s)	Scale of indicator	Number of indicators
Density			
Gross	Persons and households per hectare	Neighbourhood	3
Net	Persons and households per hectare in built up/ residential area	Neighbourhood	2
Household	Persons per household	Neighbourhood	1
Street	Residential Intensity of streets	Street	1
Mixed Uses			
Mix of uses	Number of services; ratio of residential to non-residential land	Neighbourhood	5
Overall spread and provision of services	Mix and spread of services	Neighbourhood	1
Accessibility			
Access to green space	Amount of green space	Neighbourhood	2
Overall spread of bus stops	Number and spread of bus stops	Neighbourhood	2
Bus service frequency	Number of buses per hr during weekday	Neighbourhood	1
Connectedness			
Degree of connectedness	Number of junctions per hectare and per street	street	2
Block size	Average distance between junctions per street	Street	1
Legibility			
Landmarks	Number of landmarks	Street	1
Nodes	Number of nodes	Street	1
Node rating	Rating of nodes	Street	1
Attractiveness			
Perception of attractiveness	Respondents' opinions on attractiveness of neighbourhood	Household	1
Extent of greenery	Amount of open space and number of trees per case study	Neighbourhood/ street	3
Inclusiveness			
Pavement/street	Average width of pavement; instances of ramps/ dropped kerbs	Street	3
Seating	Number of primary and secondary seating and spread	Neighbourhood/ street	4
Bus shelters	Instances of shelters at bus stops	Street	1
Toilets	Number of public toilets per neighbourhood	Neighbourhood	1
Maintenance			
Pavement state	Assessment of pavement condition per street	Street	1
Level of litter	Assessment of amount of litter per street	Street	1
Homes & gardens	Number of homes and gardens below average state per street	Street	1
Extent of natural surveillance			
Active frontage	Proportion of 'active' building frontage per street	Street	1
Character			
Character of the neighbourhood	Interviewees' assessment of the neighbourhood's character	Individual	4
Rating of quality	Interviewees' and respondents' assessment of quality of the neighbourhood	Household/ individual	2

Table 4.2 Social cohesion indicators

Antecedent of social cohesion	Summary of indicator(s)	Scale of indicator	Number of indicators
Social interaction			
Positive interaction	Interaction with neighbours	Household	4
Negative interaction	Non-interaction with neighbours	Household	2
Social networks			
Socialising in the neighbourhood	Socialising with neighbours	Household	1
Network of friends	See friends/ friends in neighbourhood	Household	2
A sense of community			
Feelings towards neighbourhood	Pride in neighbourhood	Household	1
Social order in neighbourhood	General relationships between neighbours	Household/ individual	5
Participation in organised activities			
Active participation	Participation in activities in neighbourhood	Household	6
Trust and reciprocity			
Mutual trust among neighbours	Extent of reciprocal relationships	Household/ individual	3
Feelings of safety			
Perceptions of safety	Respondents' opinions on feelings of safety in the neighbourhood	Household	1
Perceptions of crime	Respondents' opinions on level of crime in the neighbourhood	Household	1
Sense of attachment to a place			
Feelings of attachment to neighbourhood	Level of attachment to neighbourhood	Household/ individual	3

Table 4.3 Indicators of intervening influences

Intervening influence	Summary of indicator(s)	Scale of indicator	Number of indicators
Social characteristics of respondent	Age; gender; ethnic group	Household	3
Socio-economic characteristics of respondent	Individual income; household income	Household	2
Household characteristics	Household size; household composition; car ownership	Household	3
Tenure	Tenure on household property	Household	1
Accommodation characteristics	Accommodation type; access to garden	Household	2
Residential turnover	Length of residence; plans to move house	Household	2
Urban layout	Predominant street pattern	Household	1

4.4 The method of selecting the sample

To ascertain the influence that the quality of the built environment has on social cohesion in English neighbourhoods, the most appropriate way to select as representative a sample of the population as possible would be to employ a method of random sampling of all English residents. This was not possible for the following reason. Such a process of primary data collection would be prohibitive both in terms of time and cost. For example, for every case (or household) selected, primary data would be required about that household, as well as the features of quality of the built environment of the street and neighbourhood in which the household was situated. Similarly, the selection of a sample of the population using a random selection of streets in England also involves intensive primary research all over the country, which was not feasible. The method of sampling selected for the purposes of this research was based on the identification of neighbourhoods, and subsequently a sample of residents within such neighbourhoods was randomly selected for inclusion in the household questionnaire survey sample (more detail is provided in Section 4.4.2). This was because a number of the indicators employed in the research are either measured at the neighbourhood level (as Tables 4.1-4.2 show) or require residents to call on knowledge of their neighbourhood. To select the neighbourhoods objectively, the method of neighbourhood delineation employed was as outlined in the following section.

4.4.1 The method of selecting the neighbourhoods

The one criterion employed in the selection of the urban areas for this research require that they should be considered as neighbourhoods. This proved to be a problematic and complex criterion for several reasons. The boundary of a neighbourhood depends on who is defining it (Blackman, 2006). Neighbourhoods have long been a subject of social sciences research and there is no consensus on how they should be defined (Brower, 1996; Jenks and Dempsey, forthcoming, 2007). Galster describes 'neighbourhood' as 'hard to define precisely', but, as a term in common parlance, 'everyone knows it when

they see it' (2001, p. 2111). The term is used to describe social, spatial, socio-spatial and functional entities (Barton, 2000d; Barton *et al.*, 2003; Davies and Herbert, 1993 ; Keller, 1968; Kearns and Turok, 2004) as well as used interchangeably with the term 'community' (Dear and Wolch, 1989; Hallman, 1984; Suttles, 1972). There are theorists who discuss the physical environment or space as 'consisting of social norms and institutions', which depend on the social relations that take place there because space is a 'manifestation of social relationships' (Madanipour, 1998, p. 81; Lawton, 1970, in Rapoport, 1977, p. 8; Blackman, 2006). 'Community' is discussed as a physical setting for social activity which cannot be divorced from its spatial context (Davies and Herbert, 1993 ; Fischer, 1976; Janowitz, 1978; Park *et al.*, 1967; Simmel, 1948 [2002]; Suttles, 1972), which is also how theorists also describe the 'neighbourhood' (Galster, 2001; Hallman, 1984; Keller, 1968). While it is argued to be rare to find a wholly spatially-based definition of 'neighbourhood' because of the dependence of the concept on social phenomena (Jenks and Dempsey, forthcoming, 2007), it is common for 'neighbourhood' to be described as having physical boundaries (Barton, 2000e). The lack of consensus on how to define its physical boundaries leads to difficulties in operationalizing a definition of 'neighbourhood'.

Existing methods of neighbourhood delineation, such as by postcode sectors or administrative boundaries such as ward or output area boundaries used in the Census, are well-known and commonly used in social sciences research (Crane, 1991; Hirschfield, 1994; Hirschfield and Bowers, 1997; Stafford *et al.*, 2003; Martin, 1998). However, it has not been shown that such boundaries correspond to neighbourhood boundaries as defined by residents (Jenks and Dempsey, forthcoming, 2007). Consistency in the use of boundaries may be critical if the researcher is asking residents questions about their neighbourhood and (s)he is unaware of the differences in the way the neighbourhood is defined. Suttles argues that people use pronouns deliberately when discussing the neighbourhood to differentiate between their different interpretations of the term: 'my' neighbourhood indicates the home, family and immediate neighbours, whereas 'our' neighbourhood refers to a localized group of people defined by income or ethnicity; 'the' neighbourhood 'has a more fixed referent and usually possesses a name and some sort of reputation known to persons other than the residents' (1972, p. 37). In an attempt to pin down the definition of 'neighbourhood', theorists have described it as a functional entity which provides services and facilities to support the needs of residents (Ahlbrandt and Cunningham, 1979, in Hallman, 1984; Jenks and Dempsey, forthcoming, 2007). This interpretation of neighbourhood has long been advocated in theory and practice and continues to be supported in planning, urban design and sustainable communities literature (Barton *et al.*, 2003; Brower, 1996; Burton and Mitchell, 2006; Hallman, 1984; Howard, 1898; Jacobs, 1961; Barton, 2000f; Aldous, 1992; Alexander *et al.*, 1977; DETR,

Howard, 1898; Jacobs, 1961; Barton, 2000f; Aldous, 1992; Alexander *et al.*, 1977; DETR, 2000a; Robbins, 2004; Talen, 2003; Urban Task Force, 1999). However, there is no consensus on which services must be provided in helping to constitute a neighbourhood, nor at what distance from residential areas (Jenks and Dempsey, forthcoming, 2007). Furthermore, there is conceptual confusion created from the close proximity that the term 'neighbourhood' has with 'community'. Some theorists use the latter to refer to social relations in a given spatial area (Dear and Wolch, 1989; Janowitz, 1978), whereas others argue that applying any geographical boundary to a 'community' is not possible (Wellman et al., 1988, in Crow and Allan, 1994; Davies and Herbert, 1993 ; Webber, 1964).

This lack of consensus leads to a methodological difficulty: how to interpret conflicting theories of a spatially-based concept into an operational definition with which to select physical areas for study. In this research, an exploration of methods of operationalizing such interpretations of neighbourhood included a small-scale initial study which analyzed the delineations of neighbourhood according to a small sample of residents. They were asked to mark on a map what they understood to be their neighbourhood boundary. Figures 4.1 and 4.2 show the results; they illustrate the lack of agreement on neighbourhood delineation.

It therefore seems unlikely that a common area would be identified if all residents were asked to draw a line around their neighbourhood. The exercise yielded the following conclusions:

- Using a small sample to ascertain the boundaries of a neighbourhood inhabited by far more people is inappropriate and lacks rigour.
- Even if the sample of residents is considerably increased, identification of a *common* 'neighbourhood' area would still be inaccurate: residents may refer to different perceived neighbourhood boundaries when answering questions about different aspects of their neighbourhood. To use only the area commonly included in 'neighbourhood' by all residents in the sample would not be appropriate; rather the total area specified by all respondents would have to be examined.
- Employing a method which defines an area for analysis according to a sample of residents' understanding of their 'neighbourhood' may actually skew the data analysis because of the value-laden connotations of the term and residents' interpretations of it (Galster, 2001).
- Because the physical form itself is under examination, the neighbourhoods to be examined should be selected according to physical, objective, and not subjective, criteria.

It was therefore decided that a method of neighbourhood delineation which required a minimal amount of subjectivity on the part both of the residents and the researcher would be adopted. For this reason, physically-bounded neighbourhoods were identified within the six larger *CityForm* project 'case study' areas in Oxford and Sheffield according to physical boundaries including main roads, railway lines, waterways and open space (Figure 4.3; also see Home Office, 2004, p. 14; Willmott, 1986).

However, further analysis conducted in this initial research indicated that, for these six neighbourhoods, the spatially delineated boundaries captured only 12% of the area identified by residents as their neighbourhood (hereafter referred to as RNB). In an attempt to address this discrepancy, and capture the spatial area that people living at the edge of the neighbourhood might include in their own delineation, buffer zones of 400m (Figure 4.4) and 800m were added to the boundary. Subsequent analysis showed that the 'spatial' neighbourhood boundary plus a 400m buffer zone captured on average 73% of the RNB in 81% of its area, while the 'spatial' neighbourhood boundary plus an 800m buffer zone captured 96% of the RNB in an area which constituted 203% of the RNB area. Put another way, the total area for neighbourhood delineation using this method is over twice the size of the RNB, and captures almost 100% of the RNB. Jenks and Dempsey (forthcoming, 2007) suggest that there is a law of diminishing returns in terms of the efficiency of these methods, and, taking time and cost constraints into account, concluded that for the purposes of this research the physically-defined neighbourhood boundary + 400m buffer zone captured a sufficient quantity of the area identified by residents. This larger buffer zone formed part of the physical site survey, but the sample targeted in the household questionnaire survey and semi-structured interviews resided within the smaller (physically delineated) neighbourhood boundary. In this way, some of the indicators of quality of the built environment were measured at the neighbourhood + 400m buffer zone.

The neighbourhoods selected for this research are physically delineated areas in Oxford known as Grandpont, Jericho and Blackbird Leys, and Netherthorpe, Walkley and Fulwood in Sheffield. Appendix D and Chapter Six provide details about the six neighbourhoods and the population and sample residing within them. The following sections outline the methods used to collect the data in these neighbourhoods.

4.5 Methods of data collection

A number of methods were employed to measure the indicators using a combination of primary and some secondary data sources. The secondary data sources relate to the quality of the built environment variables. The main source of secondary data is Ordnance Survey MasterMap data: an up-to-date 'digital representation of uniquely identified geographical features which 'correspond[s] to real-world objects', whose data layers are viewed and analysed by using the MapInfo software package (Ordnance Survey [OS], 2006a). This enables the calculation of specific spatial areas, and, together with Census data, allows specific density measures to be calculated. The Census is a compulsory survey dating back to 1801 carried out every ten years, 'which helps to ensure that the coverage of the population is as complete as possible' (Burton, 1997, p. 92; Hirschfield, 1994). The 2001 Census data was accessed using the Casweb online tool (available at http://census.ac.uk/casweb/). The data is available at the level of output areas made up of approximately 125 households (Office for National Statistics [ONS], 2005). The boundaries of the neighbourhoods do not correspond exactly with those of the Census output areas; however, for accurate data relating to density in particular, the average Census statistics for a given output area, together with the OS MasterMap AddressPoint layer, were used. The AddressPoint layer provides 'precise coordinates for more than 26 million residential and commercial properties in Great Britain' and is 'the most accurate and up-to-date link between any property address and its location on the map' (OS, 2006b). The boundaries of the geographical units in the Census changed between the 1991 and 2001 Censuses: in the 1991 Census, enumeration districts of around 200 households were the smallest geographical unit. In 2001, output areas were introduced, and designed to be 'statistically more meaningful as geographical units' (ONS, 2004, p. 8). As this study incorporates Census data with other data sources, particularly the MasterMap data in order to cross-check, such boundary changes do not have an impact on the research.

Three main methods of primary data collection are employed in this research and are listed below. They are discussed in the following sections.

- Physical site survey of each neighbourhood
- Household questionnaire survey administered to a sample within each neighbourhood
- Semi-structured interview conducted with a sub-sample of questionnaire respondents

4.5.1 Physical site survey

The majority of the data measuring the quality of the built environment was collected in each of the neighbourhoods using a physical site survey. The objective of this site survey was to collect new data for a number of indicators to measure the features of quality of the built environment. The site survey was employed for this research chiefly because there are no existing sources of data pertaining to the features of quality as identified in this research. Burton *et al.* argue that there is a paucity of methods to measure the built environment, and that some measures (such as housing characteristics) are based on perceptions or non-physical aspects (such as tenure), rather than on physical features (2006). They argue that there is a need for site surveys to be comprehensive and reliable because they are more likely to reveal important associations and provide valid guidance than site surveys which focus on a small number of built form elements (ibid., p. 267). While the built environment is 'complex and difficult to define' and its assessment calls for a certain amount of judgement, a reliable site survey limits the subjectivity of the researcher (ibid.). The theoretical concepts in this research were operationalized into sets of mainly objective indicators related to the physical environment, and the site survey was found to be an appropriate and efficient method of collecting data related to these indicators. The adoption of mainly objective indicators in the site survey was advantageous, because the majority of them arise from sources of information in the built environment which do not change significantly over a short time (if at all, in some cases). This meant that on those occasions when weather conditions forced the fieldwork to be abandoned and resumed at a later date, the vast majority of the data were exactly the same. This also meant that cross-checking the collected data was easy; no subjectivity or opinions were involved.

4.5.2 Household questionnaire survey

The social survey is 'one of the most important tools used in contemporary social research' (Pole and Lampard, 2002, p. 89), and 'the most common way of collecting data' (Marsh, 1982, p. 55). It is widely employed at different scales, including national (the General Household Survey and the Census), regional (Atkinson and Kintrea, 2001), the city (Bramley *et al.*, 2006) and the neighbourhood (Campbell and Lee, 1992; Lev-Wiesel, 2003; Skjaeveland *et al.*, 1996; Onyx and Bullen, 2000). Marsh defines the survey as systematic measurements of social data made over a series of cases, yielding a rectangle of data whose variables are analysed to see if they show any patterns (Marsh, 1982, p. 6). A standardized range of information is collected corresponding to cases and a counting process is employed in the aggregation of the data across the cases (Pole and Lampard,

2002, pp. 89-90). The standardization of the data is key to the validity of the counting process and the resulting data (ibid., p. 90).

The survey was employed in this research because it is an effective method of asking a large number of people in a given geographical area non-sensitive, multiple choice questions about their levels of social cohesion in their neighbourhoods, as well as to obtain other household profile data. As with the interpretation of all indicators, caution is recommended when operationalizing theoretical concepts into survey questions (Pole and Lampard, 2002). It is argued that such operationalization by the researcher can result in a particular interpretation of a term that may not be understood or similarly interpreted by respondents (Cicourel, 1964, in Marsh, 1982). Marsh also acknowledges the difficulties inherent in standardized question-wording because of the differing interpretations (or not) by respondents of meanings of words used in surveys (1982, p. 56). Oppenheim counters this by stating that the function of any question is to 'elicit a particular communication', implying that it is natural for there to be an inherent bias in the question because 'we hope that our respondents have certain information, ideas or attitudes on the subject of our enquiry, and we want to get these from them with a minimum of distortion' (1992, p. 121). He goes on to argue that there will always be differences in the way that questions are understood by respondents and interpreted by researchers, but that the task of minimizing distortion is made easier through practices such as good question wording (ibid.).

The household survey – a self-completion questionnaire – was administered by post to 2,046 households in a total of six neighbourhoods in the cities of Oxford and Sheffield. A simple random (or probability) sampling approach was used: one where 'every member of the population of interest has an equal chance of being included' (Bryman, 2001; Pole and Lampard, 2002, p. 35), in order to draw a representative sample from the population (Oppenheim, 1992, p. 39). Individual households were selected for inclusion on a random basis and every household had a one-in-three chance of being included (after Bryman and Cramer, 2005). The response rates are presented in Table 4.4. The sample was sent a total of three questionnaires (if they did not return completed questionnaires in the freepost envelopes enclosed) over a period of two weeks in the summer of 2005. The postal method of administering the surveys was used instead of the drop and collect method due to constraints of cost and time (Munn and Drever, 1990; Pole and Lampard, 2002). Munn and Drever recommend the use of postal surveys because of the time saved for the researcher and the good return rate (1990, p. 34). Table 4.4 shows that return rates vary quite considerably from 26% in the Blackbird Leys neighbourhood in Oxford to 60% in the Fulwood neighbourhood in Sheffield. Blackbird Leys is frequently a focus of academic and local government research in Oxford (Hamid, 1990; Newbigging, 2000; Cooper, 1999; Tomline *et al.*, 2006; Church and Gale, 2000; Morrison, 2003), and it may

be that survey 'fatigue' had an effect on the response rate. The high response rate in Fulwood may be related to a high proportion of professionals residing in this neighbourhood, who, according to the primary data collected and anecdotal evidence, are said to work at the universities or at the hospital. The differences of 15% in response rate between the two cities may also be attributed to the population figures: the population of Sheffield, at the time of the 2001 Census, is almost four times higher than that of Oxford (513,234 against 134,248) and, therefore, it could be argued (all things being equal) that residents have a lower chance in Sheffield than residents in Oxford of being targeted by a survey, and so may be generally more receptive to responding positively to surveys. However, other influences may also have had a bearing on the response rates, such as socio-economic characteristics and the timing of the survey distribution (e.g. the number of student respondents may have been higher had the survey been sent out during term time).

Table 4.4 Survey return rates by city/ neighbourhood

	Case Study Area								
	Grandpont	**Jericho**	**BBLeys**	**N'thorpe**	**Walkley**	**Fulwood**	**Oxford Total**	**Sheffield Total**	**Total**
Questionnaires received	129	102	91	128	167	242	322	537	859
Total sent out	302	307	347	327	361	402	956	1090	2046
% received	**43**	**33**	**26**	**39**	**46**	**60**	**34**	**49**	**42**

4.5.3 Semi-structured interviews

A more in-depth method of data collection than the household survey is also required for this research for two reasons: firstly, the subjective nature of the quality of the built environment necessitates minimization of subjectivity on the part of the researcher. Objective indicators of quality have been developed in an attempt to remove the opinions of the researcher as far as possible; a subjective assessment of the quality of the built environment by the researcher is not desirable or appropriate. However, the opinions of residents on the quality of the built environment of their neighbourhood are required in this research and form part of its definition. This data is not best collected via a site survey or household questionnaire survey due to the qualitative nature of the questions involved. The semi-structured interview is a suitable method of data collection because it, on the one hand allows respondents to elaborate on answers as they are not able to do in a social survey, and, on the other, allows the researcher to probe respondents for more detail in their responses. This is because the method provides 'some latitude to ask further questions in response to what are seen as significant replies' (Bryman, 2001, p. 110; Fielding and Thomas, 2001).

The second reason a more in-depth method of data collection was used in this research relates to triangulation (discussed above). Miles and Huberman (1994, p. 267) argue that triangulation sources in research should complement each other and corroborate findings. For this reason, the semi-structured interview was selected as the best method of asking a sub-sample of survey respondents in-depth questions about aspects of social cohesion already addressed in the survey, as well as asking specific questions linking the quality of the built environment and social cohesion. This was not possible in the survey itself, due to constraints in the number of questions posed and the closed nature of those questions. The semi-structured interview is therefore employed as a method of collecting primary data not collected elsewhere, as well as a method of validating data collected in the questionnaire survey as well as some data obtained from the site survey.

The semi-structured interview is selected rather than the structured (or standardized) or the unstructured (or un-standardized) interview because a degree of flexibility was required in order to probe interviewees further by asking open questions (Berg, 2004; Bryman, 2001). The structured interview offers each interviewee 'exactly the same context of questioning', meaning 'that each respondent receives exactly the same interview stimulus as any other'. That generates comparable data through the identical wording of questions (Berg, 2004; Bryman, 2001, p. 107). However, the implicit assumption is that the wording of the questions posed is equally comprehensive and meaningful to every respondent (Berg, 2004, p. 78). Such assumptions are described as 'untested articles of faith' by Denzin (1978, p. 114).

The unstructured interview does not use a schedule of questions and assumes that the researcher will not know in advance what all the necessary questions are (Berg, 2004, p. 80). This method was not selected as the question schedule had already been established as a result of the deductive approach of testing existing hypotheses underlying the research. These hypotheses have been operationalized into specific questions that a semi-structured, rather than an unstructured, interview could accommodate sufficiently with the required element of flexibility.

The semi-structured interview is frequently conducted face-to-face, widely accepted in the social sciences as a robust method of data collection (Bryman, 2001; Oppenheim, 1992; Pole and Lampard, 2002). The advantages of the face-to-face interview include picking up non-verbal cues that researchers can use to pace the interview, and to establish a good rapport with the interviewee (Berg, 2004, p. 93, p. 99). Some disadvantages are associated with face-to-face interviews, in particular the heavy time and cost implications, as well as the influence that the interviewer can have on the interviewee. Bryman suggests that interviews conducted by telephone 'may offset the likelihood of respondents' answers being affected by the interviewer' because he/she is

not physically present (2001, p. 112). The telephone interview is also cheaper and easier to administer and less time-intensive (ibid.). Due to time and cost constraints, telephone interviews with a sub-sample of the larger sample who returned a household survey were employed in this research, and a total of 102 telephone interviews were conducted, constituting approximately 12% overall of the total number of surveys returned by respondents. The breakdown of the figures are shown in Table 4.5. The following section explains how the data collected using this and the other methods already outlined, was analyzed.

Table 4.5 Semi-structured interview response rates

	Case Study Area								
	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood	Oxford Total	Sheffield Total	Total
Number of returned questionnaires	129	102	91	128	167	242	322	537	859
Number of semi-structured interviews	16	11	14	13	19	29	41	61	102
% completed semi-structured interviews of questionnaire responses	**12**	**11**	**15**	**10**	**11**	**12**	**13**	**11**	**12**

4.6 Data compilation and analysis

A large quantity of data about the features of quality of the built environment and the dimensions of social cohesion in the six neighbourhoods was collected, using the different research methods outlined above. Once these data were collected in the 'raw' form, they were, on the whole, compiled into a database using the Statistical Package for the Social Sciences (SPSS). To establish whether or not there is a relationship between features that constitute high quality in the built environment and social cohesion, and what the nature of that relationship might be, the data analysis was led by a number of research questions:

- Do the empirical findings provide evidence of a relationship between the quality of the built environment and social cohesion?
- Which relationships suggest an increase in social cohesion?
- Of the intervening variables which may have an influence on social cohesion, how significant is the quality of the built environment?
- Overall, does the quality of the built environment have a positive or negative association with social cohesion?

The research objective, to identify the features of high quality in the built environment in England that are most likely to support social cohesion in its neighbourhoods, was focused through two questions:

- Does the quality of the built environment significantly influence the outcome of social cohesion in neighbourhoods in England?
- If so, which features of quality of the built environment appear to support social cohesion in neighbourhoods in England?

Analysis of the data was conducted in a number of stages. Because of the large number of indicators, for the majority of the tests composite variables were created, to allow for an evaluation of the relationships between different overall indicators.

To explore the nature of social cohesion and quality of the built environment in English neighbourhoods, descriptive analyses were conducted to examine frequencies and levels of variance. To examine the relationships, if any, between the two sets of variables regarding quality of the built environment and social cohesion across all the neighbourhoods, Spearman's Rank Order correlation (rho) coefficient, designed for use with ordinal level data, was used (Bryman, 2001) and significant relationships were identified. Those features of quality of the built environment strongly associated with social cohesion, and those antecedents of social cohesion most strongly associated with quality of the built environment were revealed. To identify the strength of the relationship between features of quality of the built environment and social cohesion when other, intervening variables were included in the analysis, a range of regression analyses were conducted. These consisted of step-wise multiple linear regression and binary logistic regression. More than one method of regression analysis was required because of the nature of the dependent variables under scrutiny, which varied between continuous and dichotomous. The regression analyses highlighted the most significant predictors of the dimensions of social cohesion in a number of tests which both excluded and included intervening variables.

While factor analysis is a method of data reduction widely used in the social sciences (for examples see Skjaeveland *et al.*, 1996; Stafford *et al.*, 2003; Unger and Wandesman, 1982; Onyx and Bullen, 2000; Hirschfield and Bowers, 1997; Bollen and Hoyle, 1990; Buckner, 1988; Burkhardt, 1971; Burton, 1997), it was largely not included in the data analysis; however, it was conducted to form a small part of the statistical analyses. The techniques of factor analysis are designed to 'assess the degree to which items...are tapping the same concept...by telling us the extent to which [variables] seem to be measuring the same concepts or variables' (Bryman and Cramer, 2005, p. 324). Chatfield

and Collins discuss the disadvantages of factor analysis, arguing that it is unrealistic to assume that factors exist at all, because factor analysis cannot take into account 'underlying *unobservable* variables' (authors' italics, 1980, p. 88). They state that factor analysis assumes that the researcher has knowledge of the number of factors, which may actually be unknown (ibid.). It is also argued that before factor analysis is conducted, the researcher should have some idea of what a particular set of variables may have in common with each other, and that some attempt should be made 'to include variables that might make sense together' (de Vaus, 2002, p. 116). This particular observation is the reason why factor analysis was not used in the main statistical analyses of this research. The indicators created for this research were informed by the theory and practice discussed in Chapters Two and Three. The indicators, one set relating to quality of the built environment and the other to social cohesion, are conceptually related to others in the relevant set. While conducting a factor analysis may show whether or how such sets (and sub-sets) of indicators tap into the same concept, it would be a superfluous exercise because those sets of variables would in any case be analysed in sets, in order to achieve the aims of the research. However, factor analysis is conducted as part of *post hoc* analysis examining the interaction between all of the indicators. Principal components analysis (PCA), one of the techniques within the 'family' of factor analysis, was used because it is well-suited for providing an empirical summary of datasets (Tabachnick and Fidell, 1996, p. 664). Furthermore, multicollinearity, or a presence of high inter-correlation between variables, is not problematic in PCA 'because there is no need to invert a matrix' (Tabachnick and Fidell, 2001, p. 589). Further reference is made to PCA and factor analysis in Chapter Seven.

4.6.1 The creation of composite variables

Multiple-indicator measures were employed in this research, requiring an aggregation to one value for each overall 'headline' indicator. To do this, summary measures or composite variables were created by transforming each variable into a 'z-score'. The 'z-score' standardizes the values of all indicators, putting them on the same scale of reference and allowing them to be directly compared and analysed (Hinton, 2004; Burton, 1997). The 'z-score' is calculated as follows:

$$\frac{\text{value - mean}}{\text{standard deviation}}$$

This standardizes the value of the indicator to have a mean of zero and a standard deviation of 1.0. Cases with a below-average value on an indicator are assigned a

negative score and those with an above-average value have a positive score. Various sets of composite indicators were established to measure the individual features of the quality of the built environment (e.g. high-density, mix of uses) and the individual antecedents of social cohesion (e.g. social interaction, social networks), and the average of all indicators measuring social cohesion. The averages of the indicators measuring both concepts (of quality of the built environment and social cohesion) were not established; the nature of the variables did not permit this. In some cases, a composite variable was not created because the variables employed to measure the same concept were not compatible or it was not a valid exercise to combine them into one, overall indicator. For example, where the feature of quality or the antecedent of social cohesion included an indicator whose data were collected from semi-structured interviews because these were with a sub-sample of respondents only, it is dealt with in the analysis as a separate indicator. It is inappropriate to generate a z-score for such an indicator because of the small size of the sample in relation to the sample size of other z-scored variables. The composite measures are listed in Tables 4.6 and 4.7.

Table 4.6 Composite measures of quality of the built environment

Indicator	Description of indicator
Z_dens	Average of all high density indicators
Z_muse	Average of all mix of use indicators
Z_access	Average of all accessibility indicators
Z_conn	Average of all connectedness indicators
Z_legib	Average of all legibility indicators
Z_attract	Average of some attractiveness indicators
Z_inclu	Average of all inclusiveness indicators
Z_maint	Average of all maintenance indicators

The method of 'z-scores' to create summary measures is well-established, and 'has the advantage of being a simple and transparent method which can be easily understood' (Burton, 2002; Coombes and Wong, 1994, p. 1309). There are, however, disadvantages to using 'z-scores' because they over-simplify data by 'ignoring complex relationships between the issues which the indicators represent' (Coombes and Wong, ibid.). Using 'z-scores' carries with it the assumption that each variable is of equal importance (through the application of 'null weighting') and there is also a danger of 'double-counting', or indirect weighting of the variables (Burton, 2002, p. 236; Coombes and Wong, 1994, p. 1309). The problem of measuring conditions more than once is overcome by using the average rather than the sum of the z-scores in subsequent analyses (Burton, 2002).

Table 4.7 Composite measures of social cohesion

Indicator	Description of indicator
Z_SI_all	Average of all social interaction indicators
Z_SI_pos	Average of all positive social interaction indicators
Z_SI_neg	Average of all negative social interaction indicators
Z_SNtwk	Average of all social network indicators
Z_SoC	Average of some sense of community indicators
Z_trust	Average of some trust/ reciprocity indicators
Z_safe	Average of all safety indicators
Z_pattach	Average of some sense of place attachment indicators

4.6.2 The weighting of variables

The weighting of variables can be applied to a sample in order to make it representative of the population of which it forms part (Hinton, 2004; Lynn *et al.*, 1994). This can be desirable because it is argued that survey 'data in their raw form are often not representative of the population for which estimates are required, and simply analyses in which each case is given an equal weight will produce inaccurate estimates' (Lynn *et al.*, 1994, p. 1). A difficulty in attempting to achieve an accurate estimate for a population, or making generalizations about the population from the sample, is determining the population itself. Because a form of clustering has been applied in the sampling process by selecting samples within a number of delineated neighbourhoods rather than by selecting a random sample across the total population of England, the population would be considered to be made up of all those residents living within the identified neighbourhood boundaries. It is unclear how such a sample might be weighted to make it more representative of the population. In terms of socio-economic characteristics, some comparisons might be made between the sample and the wider population who were residing in the relevant Census output areas on 29th April 2001, the date the Census survey was carried out. These comparisons might relate to the age, gender, employment status or tenure of property of the population, and weighting might be applied to reflect these characteristics. However, despite its employment in existing research (Bramley *et al.*, 2006; Lynn *et al.*, 1994), it is unclear which characteristics, individual or combined, might be used to weight such a sample.

An alternative approach to achieving a representative sample is randomly to select a sample (Bryman, 2001). This is the approach adopted for this research; each household in each neighbourhood had the same chance of being included in the household survey sample (as discussed in Section 4.5.2). While this is a valid alternative to weighting the sample, it is not without its problems. It is not clear whether using such a method of

sampling actually does allow the researcher to make generalizations about the population (Bryman, 2001). Bryman points out that inferences are often drawn erroneously and applied beyond the population involved when research is based on random sampling within it (ibid., p. 75). He also suggests that a 'random selection process does not guarantee a representative sample, because...there are factors that operate over and above the selection system used that can jeopardize the representativeness of a sample' (ibid.). It should be noted that it was not possible randomly to select the sample which participated in the semi-structured interviews; this was based on self-selection, or volunteering on the part of the resident (after Bryman and Cramer, 1997). Bearing these caveats in mind, findings from this research should not be generalized beyond the populations of the neighbourhoods examined.

Weighting also was not applied in this research to the variables measuring quality of the built environment or social cohesion. The choice to weight variables can depend on the application of some theoretical or other reason as justification. Coombes and Wong highlight different methods of weighting indicators in research. Weighting can be applied according to 'experts...in the specific field of application' (1994, p. 1308). While this method has the advantage of incorporating 'practical experience into the analysis', it is criticized because 'it is difficult to decide who are the experts and how to derive the precise weightings from their judgements' (ibid.). Such a method can be said to be based on individual, subjective points of view (ibid.; Burton, 1997). Applying weighting, according to the literature, may not be feasible because of difficulties encountered when attempting to operationalize, for example, theoretical interpretations into a set of numerical values. The approach adopted for this research is that of 'null weighting'. This is where no weighting is applied to indicators under the assumption that 'all indicators are of equal importance' (Burton, 1997; Green and Champion, 1991). While theory has informed the definition of the concepts under scrutiny as well as the selection of indicators, there is no guidance in theory or practice as to which indicators or aspects of the concepts might be more important than others. For this reason, no weighting is applied to the variables measuring features of quality of the built environment or social cohesion.

4.6.3 Descriptive analysis

Descriptive analyses were conducted first; this was to provide limited background information about the physical characteristics of the neighbourhoods, as well as about the relevant samples and populations. These data relate to the features of quality of the built environment present or not present in the six neighbourhoods, as well as to the levels of social cohesion within them. They provide some detailed information about the residents

who took part in the survey and interviews, and about the neighbourhoods in which they live, but do not form part of the principal data analysis.

4.6.4 Correlations

Correlation is an important part of the analysis; it directly relates the indicators measuring the features of quality of the built environment to the indicators measuring social cohesion. Analyses of correlation are used to explore the strength and direction of a relationship between two variables (Pallant, 2001). This research employed Spearman's Rank Order correlation (rho) coefficient, designed for use with ordinal, or categorical, data (Bryman, 2001): for interval, or continuous variables, Pearson product moment correlation coefficient was used (Pallant, 2001). The analyses generated coefficients for all combinations of indicators, including summary measures. The correlation analyses were conducted with a two tail test of significance because 'no specific prediction was being made concerning the direction of the relationship between the variables' (ibid., p. 119). The value of Spearman's rho varies between -1 and 1, and the closer the value generated is to 1 or -1, 'the stronger the relationship between two variables' (Bryman and Cramer, 1997, p. 176). Cohen suggests that values below .29 (or-.29) should be considered to represent a small correlation, .30 to .49 (-.30 to -.49) a medium correlation, and .50 and above (or -.50 and above) a large correlation between two variables (Cohen, 1988; Pallant, 2001). A value of zero suggests no association between the variables. Tests of correlation are very useful in this research in assessing whether the claimed relationships between the features of quality of the built environment and social cohesion are confirmed, and how the intervening variables are associated with the indicators of social cohesion. However, more in-depth analyses are required to examine the relationships between indicators which take into account more than two variables at a time.

4.6.5 Regression analysis

Tests of regression analyze 'the relationship between a set of independent variables and a single dependent variable' (de Vaus, 2002, p. 343). The dependent variable is the variable affected (social cohesion) by the influencing, independent variable (quality of the built environment) (Pallant, 2001, p. 95). The result of multiple linear regression analysis, *R*, 'represents the total amount of variance accounted for in the dependent variable by the independent variable(s)' (Miles and Shevlin, 2001, p. 32). The result of a binary logistic regression is slightly different; it indicates how well the model, that is to say the combination of independent variables included in the analysis, predicts the presence (or absence) of the dependent variable (Tabachnick and Fidell, 2001). The regression

analyses also indicate the relative contribution that each variable makes to the variance (or prediction in logistic regression) of the dependent, or affected, variable, taking into the account the other variables. This is particularly useful in analyses where the influence of the quality of the built environment is examined alongside a number of intervening variables, to determine whether it, or the intervening variables, has a stronger influence. Certain assumptions are made in regression analyses, which are highlighted in Tables 4.8 and 4.9. Two specific methods are employed in the regression analyses are: linear stepwise regression and stepwise binary logistic regression. Linear stepwise regression includes and removes predictors (the independent, influencing variables) from the equation 'solely on statistical criteria', and is therefore a robust 'screening or hypothesis-generating technique' (Tabachnick and Fidell, 1996, p. 535).

Table 4.8 Assumptions of multiple linear regression (after de Vaus, 2002, p. 343; Pallant, 2001, pp. 136-137; Tabachnick and Fidell, 1996, p. 132)

Assumptions of multiple linear regression
The dependent (or affected) variable is continuous (or interval)
The independent (or influencing) variables are continuous or dichotomous (i.e. a variable with only two values, e.g. sex, males=1, females=2)
There must be no multicollinearity: i.e. the independent variables must not be too highly correlated
The variables must be related in a linear way
The variables must be normally distributed
Relationships between the variables will exhibit homoscedasticity - the variance on the dependent variable will be consistent across all values of the independent variables
Recommended ratio of cases to independent variables is: N >=50 + 8 m (where m = the number of independent variables)
When using stepwise regression, the ratio of cases to independent variables rises to 40 to 1 because this can produce a solution that does not generalize beyond the sample unless it is a large sample

Table 4.9 Assumptions of binary logistic regression (after Tabachnick and Fidell, 1996, 2001; de Vaus, 2002)

Assumptions of binary logistic regression
The dependent (or affected) variable is dichotomous (i.e. a variable with only two values, e.g. sex, males=1, females=2)
The independent (or influencing) variables are continuous, categorical or dichotomous
The relationship between the variables are assumed to be non-linear
The variables are not normally distributed
Relationships between the variables do not need to exhibit homoscedasticity
A minimum of 50 cases per predictor variable is recommended

Tabachnick and Fidell warn that care must be taken not to 'misinterpret the exclusion of a predictor; the predictors may be very highly correlated with the outcome but not included

in the equation because it was "bumped" out by another predictor or combination of predictors' (1996, p. 535). Stepwise binary logistic regression is a more flexible technique than linear regression as it does not have the same stringent assumptions (Tabachnick and Fidell, 2001). This method clearly shows which variables are entered into the analysis and which are finally excluded (Kinnear and Gray, 2004). The method has been described as a 'brute-force method' which has the disadvantage of modelling noise, or superfluous information, into the model and is 'considered useful only for exploratory purposes' (Garson, 2006). For both of these methods, the regression analyses were conducted using both stepwise and 'enter method', which enter all variables into the analysis without exclusion, and the results are examined together.

It was necessary at some points in the analysis to look in more detail at the nature of the association between indicators. For example, where a significant association is found between an indicator of social cohesion and a categorical intervening variable (such as sex or tenure), statistical tests including the chi-square test, independent samples t-test, one-way between groups analysis of variance (ANOVA) and two-way ANOVA allow differences in scores of social cohesion (e.g. for men and women, for homeowners and renters) to be examined in more detail. A specific test was selected according to the nature of the variable, the number of categories and the numbers of groups under scrutiny (Pallant, 2001). ANOVA tests were conducted to compare the 'variability in scores' between different groups (ibid., p. 186); chi square tests to determine 'whether there really is a relationship between two [categorical] variables' if two categorical variables are related' (Bryman and Cramer, 1997, p. 168); and t-tests 'to compare the mean scores of two different groups of people or conditions' (Pallant, 2001, p. 177).

4.6.6 Content analysis

The semi-structured interviews generated a large quantity of both qualitative and quantitative data. On the whole, the quantitative data was not subject to the same statistical analysis as the survey data because it was considered more appropriate to apply a frequency analysis due to the nature of the questions: they directly ask interviewees about their opinions on aspects of quality of the built environment in relation to social cohesion. The qualitative data collected was analyzed using content analysis, including coding, counting phenomena, and comparing and contrasting relations between variables (Bryman, 2001; Coffey and Atkinson, 1996, p. 47). Content analysis has been defined as 'any technique for making inferences by objectively and systematically identifying specified characteristics of messages' (Holsti, 1969, in Bryman, 2001, p. 178). Coding data and counting phenomena as they occur in the data are examples of objective

and systematic techniques which aim to minimize the researcher's personal biases in the research process; however, it is acknowledged that some interpretation will be involved in the process (Bryman, 2001). Content analysis is argued to be 'firmly rooted in the quantitative research strategy' as its 'aim is to produce quantitative accounts of the raw material in terms of the categories specified in the rules' (Berelson, 1952, paraphrased in Bryman, 2001).

Coding transcribed interview data is a method of organizing, retrieving and interpreting raw data (Coffey and Atkinson, 1996, p. 27). Such data are organized and reduced into different code categories, modified as and when necessary throughout the process, with care taken to code consistently and not lose the original meaning and sense of the data (Bryman, 2001; Coffey and Atkinson, 1996; Pole and Lampard, 2002). The finalized categories may then appear to fall into similar groupings or consist of further sub-categories, needing to be organized by the researcher (Coffey and Atkinson, 1996; Pole and Lampard, 2002). Data coding is based on 'grounded theory', which is, in essence, 'the discovery of theory from the data' (Pole and Lampard, 2002, p. 200). This is a suitable approach to take in relation to the open questions asked in this research such as those relating to the description of the character of the neighbourhood and the rating of quality of the neighbourhood. It is not the intention of this research to assess the character or the quality of the built environment in a neighbourhood according to a series of benchmarks. The researcher is unable to assess what gives a neighbourhood its character or its sense of place and no attempt is made to do so. The most appropriate way of determining the effect of such subjective features of a neighbourhood is to ask the residents who live there. It should be taken into account that while this approach is taken, it will be insufficient insomuch as it is not able to account for the variability in character and sense of place of different neighbourhoods, or to capture the very essence of the character of the neighbourhood.

4.7 Conclusions

The overall methodological approach developed for this empirical research is that of a large-scale cross-sectional investigation employing a combination of quantitative and qualitative research methods. To undertake the research efficiently and effectively, six neighbourhoods were identified and samples were randomly selected from the populations within the neighbourhood boundaries. The six neighbourhoods in Oxford and Sheffield were selected using an objective method of delineation according to physical boundaries and natural features such as main roads, waterways and open space. A wide range of indicators was selected to measure the features of quality of the built

environment and social cohesion. The methods of collecting these data were identified as a physical site survey (including desktop mapping work), a household questionnaire survey and a semi-structured interview. A large quantity of data was collected and a series of statistical tests was necessary for the analysis. As well as initial descriptive analyses, employed to provide contextual data about the samples and where those samples resided, the bulk of the analysis was comprised of correlations and regression analyses conducted to determine the nature and extent of the relationship between features of quality of the built environment and dimensions of social cohesion. Content analysis was also employed as a method of qualitative data analysis.

It should be noted that there are limitations to this study and the indicators employed. Firstly, the indicators used are operationalized measures of complex and nebulous concepts. The indicators therefore may not measure fully the concepts they are designed to assess. This is discussed in detail in Chapter Five. It is the case that some indicators will be less reliable than others, and the disadvantages of their use are addressed as well as the caveats required.

It was highlighted in Chapter Two that some features of quality were not addressed in this research as they were outside its scope. The scale of this research precluded the inclusion of a number of commonly agreed features of quality, such as visual complexity, durability and flexibility, as it was not possible for examination of the built environment to be conducted at the level of individual buildings. Therefore it could be argued that any generalizations or conclusions about the quality of the built environment need to be stated with reference to those features omitted from the research.

The built environment in city centre, suburban and 'intermediate' urban areas is examined and the research does not extend to other urban forms such as rural settlements or large-scale new-build housing developments. The relationship between the quality of the built environment and social cohesion in other types of urban settlement not examined in this research is not purposefully excluded from examination: in fact, it is argued that new housing developments are designed with government policy emphasis on the quality of the built environment in mind (DETR, 2000a; Urban Task Force, 1999). However, the cost and time implications involved in extending the research to include a multitude of urban forms were prohibitive. The research methodology could however easily be applied to neighbourhoods in other types of urban settlement and form part of future research.

Such shortcomings of the research methodology will have an effect on the conclusions that can be drawn from the data, as well as on the level of significance of the findings within a wider context. However, such shortcomings do not diminish the importance of this research in achieving its objectives, and, ultimately, addressing the gap in knowledge.

Chapter Five

Indicators of Quality of the Built Environment and Social Cohesion

Chapter Five – Indicators of Quality of the Built Environment and Social Cohesion

Chapter Four outlined the overall methodological approach used in this research, and this chapter gives detailed descriptions of the indicators used to measure the quality of the built environment and of social cohesion, as well as a variety of relevant intervening variables. The indicators were used to measure data at different scales: individual, household, street and neighbourhood. The bulk of the analyses relate to the indicators of quality of the built environment across the six neighbourhoods and indicators of social cohesion and dimensions of social cohesion collected from the sample of household questionnaire respondents and the sub-sample of semi-structured interviewees. The neighbourhoods are not compared in the analyses in Chapters Seven and Eight: they are described for descriptive and contextual purposes only in Chapter Six.

5.1 Indicators of quality of the built environment

The operationalization of the concept of 'quality of the built environment' is fraught with difficulties as essentially it is a subjective term. However, Chapter Two discussed the continued importance that the term is afforded in theory, practice and policy, and its widespread use in describing the built environment. Ten features of a high quality built environment were identified according to a comprehensive review of the literature and are listed below. A number of indicators were selected for each of the features, described in the following sections.

- High residential density
- Mixed land uses
- Accessibility
- Connectedness and permeability
- Legibility
- Attractiveness
- Inclusiveness
- Maintenance
- Natural surveillance
- Character of a place

5.1.1 Indicators of high residential density

Many different indicators are used to measure the density of the built environment in the UK, some of which go back to 1918 (Jenks and Dempsey, 2005b). This large number of measures are inconsistent (some being of population, others of built form) and largely incompatible with one another, making it difficult to accurately convert from one to another (ibid.; Churchman, 1999). Furthermore, it has been argued that no single measure can accurately measure the density of a given area (Burton, 1997; Jenks and Dempsey, 2005b). For example, the gross density of an area does not reveal meaningful information about its density if the bulk of the area is made up of open space. Similarly, the density of the built-up area can give misleading information if there is a pocket of high-density housing in a largely non-residential area (Burton, 1997). It is therefore more accurate to measure residential density by removing the area of non-residential land from the density calculations (ibid.). Density indicators were selected for this research in order to provide as complete a picture as possible of the overall density of the neighbourhoods. All of the indicators are at the neighbourhood scale, apart from street intensity, i.e. a measure of perceived density which is measured at the street level. Table 5.1 lists the indicators used to measure density in the analysis.

Table 5.1 Indicators measuring density

What is the variable measuring?	Indicator	Source	Scale of indicator
Gross density: residents	Persons per hectare	Ordnance Survey maps/ 2001 Census data	Neighbourhood
Gross density: households	Households per hectare	Ordnance Survey maps/ 2001 Census data/ OS AddressPoint data	Neighbourhood
Gross density: land	Ratio of residential land to open space per hectare	Ordnance Survey maps	Neighbourhood
Net residential density: residents	Persons per hectare in residential area	2001 Census data/ Ordnance Survey maps/ OS AddressPoint data	Neighbourhood
Net residential density: households	Households per hectare in residential area	2001 Census data/ Ordnance Survey maps/ OS AddressPoint data	Neighbourhood
Household density	Average number of persons per household	2001 Census data/ Ordnance Survey maps	Neighbourhood
Street intensity	Residential intensity of streets	Ordnance Survey maps/ OS AddressPoint data	Street

The gross and net densities were measured using the software programme, MapInfo, to view and examine map data provided by Ordnance Survey (OS). Both the spatial areas of the neighbourhoods, and the residential areas of the neighbourhoods, were calculated

using this method. To accurately measure the number of households in the neighbourhoods, and in the residential areas of the neighbourhoods, the 2001 Census was used; it provides data per output area, each consisting of approximately 125 households (Office for National Statistics [ONS], 2005). As the output area boundaries used for the Census do not consistently correspond with the neighbourhood boundaries established for this research, accuracy of household number calculations was achieved by use of AddressPoint data which provides an 'up-to-date link between any property address and its location on the map' (OS, 2006b). This data holds the addresses of the total number of households of each neighbourhood, allowing the gross and net residential (household) densities to be calculated accurately. The density indicators relating to residents (both gross and net residential) are calculated using OS Mastermap and Census data. As it is impossible to determine accurately the number of residents per household at a scale lower than output area (in part because the households survey requesting this data was not sent out to every household in the area), the Census data at the output area level was employed. Where output area boundaries and the neighbourhood boundaries for this research do not correspond, the average number of people per household was calculated, using population figures and number of households for the relevant number of output areas.

Street intensity was calculated using OS Mastermap data. For each street, the number of households was divided by the length of street for a measure of the extent of residential intensity. This indicator is useful as a measure of the density that people experience on a daily basis, and arguably contributes more to an understanding of the perceived density in a street (or wider area) than net or gross density indicators alone can do (after Churchman, 1999). The indicators employed are suitable for the measurement of density at a local level but do not fully reflect the range of indicators used in such studies. Other indicators discussed and used by theorists and practitioners include habitable rooms per hectare and bedrooms per hectare. These may reflect the residential environment well, but not necessarily population levels and, for example, the number of single-person households residing in three-bedroom dwellings (Barton *et al.*, 2003).

5.1.2 Indicators of mixed land uses

It is common for existing mixed use indicators to focus on the provision of services and facilities in a given area and the distance that they should be from residential areas (Stead *et al.*, 2000; Van and Senior, 2000; Masvani, 2000; Urban Task Force, 1999; Barton *et al.*, 2003). While, as Chapter 2 identified, there is no consensus on which services should be there or at what distance (Barton *et al.*, 2003), a number of services and facilities

commonly feature in descriptions of key services to which residents are said to require access (Urban Task Force, 1999; Winter and Farthing, 1997; Aldous, 1992; Barton, 2000c, p. 96; Barton *et al.*, 1995; Barton *et al.*, 2003; Burton, 1997). These services are listed below.

- Doctor's surgery
- Chemist
- Post office
- Bank or building society
- Corner/ convenience food shop
- Supermarket
- Restaurant/ takeaway
- Newsagent

Table 5.2 shows the indicators used to measure the extent of mixed use in the neighbourhood in this research, both to capture those services and facilities within the neighbourhood, as well as those outside it, but within walking distance (i.e. between 400-800m away [after Burton and Mitchell, 2006]). Data relating to the key services and facilities outside that neighbourhood, or in an identified 400-800m buffer zone, are collected in order to account for a possible 'edge effect': that is to say the idea that people living at the edge of an identified neighbourhood might use services outside the neighbourhood, perhaps because they are more convenient to reach than those within the boundary (after Jenks and Dempsey, forthcoming, 2007).

Table 5.2 Indicators measuring the extent of mixed uses

What is the variable measuring?	Indicator	Source	Scale of indicator
Provision of key services/ facilities per case study	Number of key services and facilities in case study	Site survey/ OS maps	Neighbourhood
Provision of key services/ facilities per hectare	Average number of key services and facilities in case study per hectare	Site survey/ OS maps	Neighbourhood
Provision of key services/ facilities in buffer zone	Number of key services and facilities in buffer zone	Site survey/ OS maps	Neighbourhood
Provision of key services/ facilities in buffer zone per hectare	Average number of key services and facilities in buffer zone per hectare	Site survey/ OS maps	Neighbourhood
Ratio of residential to non-residential land	Area of residential land/ area of non-residential land	OS maps	Neighbourhood
Spread of services and facilities in case study area	Distribution of services and facilities per neighbourhood – average standard deviation across all services and facilities	Site survey/ OS maps	Neighbourhood

The ratio of residential to non-residential land was calculated using the Ordnance Survey maps and MapInfo software. The spatial area of residential land, including garden spaces, was first calculated, followed by the spatial area of non-residential land, which, aided by the site survey and the AddressPoint data, was used to verify the non-residential land. The ratio was obtained by dividing the area of residential land by the area of non-residential land (after Burton, 1997).

In order to measure the geographical spread of the key services and facilities in each neighbourhood, the average of the standard deviation across all services and facilities was calculated (ibid.). The standard deviation calculates the 'average amount of deviation from the mean', reflecting the 'degree to which the values in a distribution differ from the arithmetic mean' (Bryman and Cramer, 2005, p. 105). The provision of key services and facilities was then measured by calculating the average of the standard deviation of the number of facilities in a defined area, which gives an overall measure of the distribution of uses around the wider area (Burton, 1997, p. 107). To take into account the spread as well as the provision, this was divided by the total number of facilities in a defined area. The method used is shown in Box 5.1:

These indicators should be taken together and not in isolation because, like the indicators of density, they give a more complete sense of the extent of mixed uses in the neighbourhood when considered together.

5.1.3 Indicators of accessibility

Indicators of accessibility in a neighbourhood can refer to different aspects of the concept: access in terms of what is available within walking distance of home (sometimes referred to as 'pedshed'), or access in terms of the means to get to, for example, services and facilities which are located further afield (Barton *et al.*, 2003; Schoon, 2001; Department of

the Environment Transport and the Regions [DETR], 1999). The former aspect of accessibility is largely dealt with by the indicators selected to measure the extent of mixed uses as they measure those services and facilities within the spatial area of the neighbourhood (and beyond) that people have access to. One important feature of the neighbourhood that residents are argued to require, and is not accounted for in the previous section, is access to open space (Barton, 2000c; Barton *et al.*, 1995; Barton *et al.*, 2003; Aldous, 1992; Urban Task Force, 1999; Pasaogullari and Doratli, 2004; CABE Space, 2005b). Two indicators measure the amount of open space in both the neighbourhood and the buffer zone around it (see Table 5.3).

Table 5.3 Indicators of accessibility

What is the variable measuring?	Indicator	Source	Scale of indicator
Extent of green open space in case study area	Amount of green open space per case study	Ordnance Survey maps / site survey	Neighbourhood
Extent of green open space in buffer zone	Amount of green open space in buffer zone	Ordnance Survey maps / site survey	Neighbourhood
Accessibility to public transport	Number of bus stops in case study area	Site Survey	Neighbourhood
Spread of bus stops in case study area	Distribution of bus stops per neighbourhood – average standard deviation	Site survey/ Ordnance Survey maps	Neighbourhood
Frequency of public transport in case study	Number of buses per hour in average 9am-5pm weekday	Timetables provided by bus companies in Oxford and Sheffield	Neighbourhood

The remainder of the indicators adopted to measure accessibility relate to provision of the means of accessing services and facilities, green space, employment etc outside the neighbourhood. This is due to the focus, in a considerable body of literature, on the importance of public transport, including research and policy relating to the compact city, sustainable communities, new urbanism and urban villages (Williams *et al.*, 2000a; Taylor, 2003; Jenks *et al.*, 1996; Duany, 2003; Office of the Deputy Prime Minister, 2005a). Two indicators measure accessibility to public transport, firstly by the number of bus stops in the neighbourhood, and, secondly, the spread of bus stops in each neighbourhood (and calculated in the same way). It was not considered necessary to measure the number and spread of bus stops in the buffer zone around the neighbourhoods as indicators are required at the neighbourhood scale. Together with the final indicator for this feature of quality, these indicators adequately show the presence of a bus route through the neighbourhood and its frequency. This information is considered to be sufficient for this indicator even though it will be the case that bus stops are situated outside the edge of the neighbourhoods and are used regularly by residents of the neighbourhood. However, as

these indicators are not focused on measuring the use of public transport, but rather the level of accessibility to it, this level of detail is not necessary. The variables measuring the quantity of open space and those measuring accessibility to public transport are entered into all analyses separately because, while both are measures of accessibility, they relate to distinct aspects and therefore are not combined to form a composite variable.

5.1.4 Indicators of connectedness and permeability

The connectedness and permeability of a neighbourhood is measured by theorists and practitioners in a variety of ways through software packages such as Space Syntax and multiple centrality assessment (MCA) (Hillier, 1996; Porta *et al.*, 2006). These programmes relate the connectedness of the local (here neighbourhood) to the global (city) to generate a measure of integration for the smaller area. For the purposes of this research, it was not deemed necessary to measure the connectedness and permeability of the neighbourhoods to the rest of the city. Instead, indicators were adapted from existing sources applicable at the neighbourhood scale to measure connectedness and permeability most effectively (see Table 5.4).

Table 5.4 Indicators of connectedness and permeability

What is the variable measuring?	Indicator	Source	Scale of indicator
Degree of connectedness of pedestrian routes per case study	Number of junctions according to point system	Ordnance Survey maps	Neighbourhood
Degree of connectedness of pedestrian routes per street	Number of junctions according to point system	Ordnance Survey maps	Street
Average urban block size per street	Approximate size of urban blocks per street	Site Survey/ Ordnance Survey maps	Street

Research conducted by Porta and Renne (2005) and ongoing research conducted by the I'D GO consortium (www.idgo.ac.uk) employ indicators which measure connectedness by an assessment of street junctions. Porta and Renne assign a points system to junctions, with 4-way (or crossroad) junctions scoring most and culs-de-sac least. There is a compelling argument for using such a system, as Figures 5.1 and 5.2 illustrate. These two figures show different junction types: Figure 5.1 shows culs-de-sac and Figure 5.2 crossroads. It would be inaccurate simply to count these junctions because that would be to miss the characteristics of the routes that the junctions connect. Culs-de-sac, for example, do not always offer the same pedestrian route choices that cross-roads do. It is for this reason that a points system was used, based on a simple count of the number of routes emanating from any junction (after Porta and Renne, 2005).

Crossroads are allocated four points, T-junctions three points, and roundabout points would depend on the number of routes. Porta and Renne allocate minus one point to culs-de-sac, but this arguably ignores that they can provide a through route for pedestrians (as does the highlighted cul-de-sac on the left in Figure 5.1). Where a through-route is not provided, one point is removed for culs-de-sac. Connectedness was measured at both street and neighbourhood level to mitigate any loss of detail that the data at neighbourhood level might undergo.

The third indicator of connectedness and permeability is the size of the urban block. Connectedness and permeability are argued to be enhanced by small block sizes (Carmona *et al.*, 2003; Urban Task Force, 1999; Jacobs, 1961). In their work on inclusive urban design, Burton and Mitchell advise that 'street blocks should be of varying short lengths from around 60-100m to allow for variety' (2006, p. 73). The indicator adopted for this research measures the average block length per street (in metres).

5.1.5 Indicators of legibility

Physical measurable features of legibility include, among other things, signage, maps and writing fonts (Kelly, 2001b), arguably more commonly relevant to visitors to an area than to residents. Other features of legibility have been argued to be relevant for people on an everyday basis (ibid.; Lynch, 1960). Bentley *et al.* recommend the use of Kevin Lynch's 'checklist of elements' in order to successfully analyze and assess the legibility of a place (1985, p. 47). They advise that paths, nodes, landmarks, edges and districts are recorded to show their intensity and distinctiveness (ibid.). It is arguably the case that the intensity of paths and, to a certain extent, nodes, has already been measured by the indicators of connectedness and permeability. However, the nature of the node has not been assessed and so it has been operationalized here into two indicators of legibility. Firstly, a node is identified by a number of criteria (Carmona *et al.*, 2003; after Lynch, 1960; Bentley *et al.*,

1985). To be described as such, a node should fulfill one or more of the criteria listed below.

- Junction of pedestrian paths/ roadways
- Concentration of characteristic
- Concentration of activity
- Concentration of uses
- Changes of travel mode

Bentley *et al.* recommend that the feature of legibility be assessed in relation to their role as focal points, and this is done here by assessing how well a node fulfills the criteria listed above. This arguably minimizes the difficulties inherent in calculating the extent to which a node is a focal point, by focusing on those permanent features of the built environment, rather than, for example, the extent of interaction occurring at any one time or the level of use of the space. The measures of legibility are listed in Table 5.5.

Table 5.5 Indicators of legibility

What is the variable measuring?	Indicator	Source	Scale of indicator
Presence of node	Number of nodes according to criteria	Site survey	Street
Assessment of node	Rating of node according to criteria	Site survey	Street
Presence of landmarks	Number of landmarks	Site survey	Street

Lynch's 'checklist' includes three further elements, the first of which is the landmark. Landmarks are commonly discussed in relation to the visitor (Kelly, 2001a; Robbins, 2004; CABE and DETR, 2000), however they are also argued to have a relationship with residents. It is suggested that landmarks contribute to people's sense of place (Elkin *et al.*, 1991; Lynch, 1960) and for this reason they are included in the research. Using the definition of landmark as a 'point reference' (Carmona *et al.*, 2003, p. 90), a range of features are classified as landmarks including roundabouts, petrol stations, pubs, works of art, civic buildings, fountains, statues, squares, parks, towers, religious buildings, community centres and libraries.

The two final elements in Lynch's checklist are the edge and the district. According to Bentley *et al.*, edges of a physical area include walls, river, viaducts and elevated motorways (1985, p. 44). Edges are not included in this research because the neighbourhoods have been identified according to criteria of physical boundaries and features such as those Bentley *et al.* discuss. Collecting this data would therefore

arguably make only a minimal contribution to the analysis. Nasar describes 'the district' as having 'some recognizable, common perceived identity' (1998, p. 7). It is unclear how large Lynch envisaged a district to be, or if he was referring to a neighbourhood when he discussed this concept. This 'perceived identity' is already encapsulated in the indicator measuring sense of place, which is why it is omitted from the research here.

5.1.6 Indicators of attractiveness

In order to minimize the subjectivity involved in the measurement of quality of the built environment examined through the site survey, indicators which were as objective as possible were favoured over subjective ones. Chapter Two highlighted how attractiveness in the built environment has a long history of being characterized by trees and greenery (Llewelyn-Davies, 2000; Howard, 1898; DoE, 1972; DETR, 1999). Other indicators of attractiveness, including ornamentation, street furniture and street art, involve a subjective appraisal of each feature: it would be inaccurate to claim that attractiveness can be measured by, for example, counting the number of pieces of public art if they were covered in litter and graffiti and might more realistically described as unattractive. For the purposes of this research, objective indicators measuring the number of trees and extent of greenery were adopted as some indicators (see Table 5.6).

Table 5.6 Indicators of attractiveness

What is the variable measuring?	Indicator	Source	Scale of indicator
Extent of greenery – trees	Number of trees per street in case study area	Site survey	Street
Extent of greenery – trees per hectare	Number of trees per hectare in neighbourhood	Site survey	Neighbourhood
Extent of greenery – open space	Proportion of open space per neighbourhood	Site survey/ Ordnance Survey maps	Neighbourhood
Subjective assessment of attractiveness of neighbourhood	Residents' perceptions of attractiveness of neighbourhood	Household survey	Household

Having said all this, it would be an inaccurate account of the quality of the built environment if the inherent subjectivity of its judgement was omitted altogether. For this reason, one indicator is a subjective assessment of the neighbourhood's attractiveness. However, it is the opinion of the residents and not the researcher that is measured. As it is the neighbourhood which is under scrutiny, it is arguably fitting that it is should be the neighbourhood's residents who assess its attractiveness. The perceived attractiveness of

buildings was not included as an indicator, as it was felt that it would have been difficult to collect meaningful data for such a specific aspect of attractiveness. To ask respondents to assess the overall attractiveness of buildings in their neighbourhood might not adequately account for any differences within the same neighbourhood that respondents might want to highlight. However, asking residents to assess the attractiveness of individual streets in the neighbourhood would have been a very lengthy process. For these reasons, it was decided that one question asking residents to assess the attractiveness of the neighbourhood as a whole, rather than focusing on one particular aspect of attractiveness, was sufficient.

The indicators of attractiveness are not combined to form a composite variable because they measure distinct aspects of the same feature. For this reason, the indicators measuring greenery and trees are combined into one variable, and the subjective assessment of the attractiveness of the neighbourhood by residents is analysed as a separate variable.

5.1.7 Indicators of inclusiveness

Indicators of inclusiveness are designed to measure how welcoming a place is to all residents and users (ODPM, 2005a; Carmona *et al.*, 2004; Burton and Mitchell, 2006). A wide range of indicators measures inclusiveness in research and practice, such as the presence of non-slip footways, level and flat footways, tactile paving, level changes with guards and handrails, clearly marked dropped kerb road crossings and good street lighting (Department of the Environment [DoE] and Department of Transport [DoT], 1992; Burton *et al.*, 2006; Mitchell *et al.*, 2003). A selection of indicators was identified which both reflects the breadth of measures and is easily assessed as part of the site survey process. The indicators measuring inclusiveness are listed in Table 5.7. The pavement is argued to be an important physical feature of inclusiveness because of the effect it can have on the everyday experience of walking for different groups of users such as older people, people with dementia and families with young children (Burton and Mitchell, 2006; Gehl, 2001). The two indicators measuring the inclusiveness of the pavement arguably reflect basic needs of the majority of users when using the street; other indicators relating to the maintenance of the pavement are discussed in Section 5.1.8. Guidelines are provided on the width of pavements which differ according to the nature of the land uses occurring there (Fleck, 1998; DoE and DoT, 1992; Lacey, 1999). The indicator used here accounts for the varying guidance by measuring the average width of the pavement in each street.

Table 5.7 Indicators of inclusiveness

What is the variable measuring?	Indicator	Source	Scale of indicator
Inclusiveness of pavements – width	Approximate width of pavement by street	Site survey	Street
Inclusiveness of pavements – crossings	Proportion of dropped kerbs at road crossings	Site survey	Street
Inclusiveness of streets – steps	Proportion of steps in public spaces accompanied by ramps	Site survey	Street
Inclusiveness of streets – primary seating	Number of instances of seating	Site survey	Street
Inclusiveness of streets – spread of primary seating	Distribution of seating per neighbourhood – average standard deviation	Site survey	Neighbourhood
Inclusiveness of streets – secondary seating	Number of instances of secondary seating	Site survey	Street
Inclusiveness of streets – spread of secondary seating	Distribution of secondary seating per neighbourhood – average standard deviation	Site survey	Neighbourhood
Inclusiveness of streets – bus stops	Proportion of shelters at bus stops	Site survey	Street
Inclusiveness of streets – public toilets	Number of public toilets per case study	Site survey	Neighbourhood

Research carried out on how the urban environment could be improved for older people (with and without dementia) found that more dropped kerbs were important to a number of respondents (Burton and Mitchell, 2006, p. 44). The indicator adopted for this research measures the proportion of all road crossings which employ dropped kerbs.

More acute level changes are dealt with by the indicator which measures the proportion of ramps employed alongside all instances of steps. The provision of ramps where steps occur in the built environment is important for people in wheelchairs, people with prams and older people, even though there is conflicting evidence about whether ramps are preferred by all groups of users (Burton and Mitchell, 2006; Fleck, 1998).

The next four indicators relate to seating, or rest places, in the built environment (Woolley, 2002). Burton and Mitchell found that a lack of seating in a place is a reason why older people may not go out as regularly as they would like or 'why they avoid certain places' (2006, p. 106). These four indicators capture not only that street furniture designed for seating (primary seating such as benches), but also other features of the built environment that provide seating as a secondary effect. Features (or secondary seating) such as bollards, steps, low walls, fences, monuments are used, often by young people, for sitting on and resting at even though their primary purpose is not seating (Gehl *et al.*, 2004). It is argued that there are specific places in the built environment which need to provide the pedestrian user with facilities, including the provision of shelter at bus stops, and of public toilets (DoE and DoT, 1992; Wooley, 1999, 2002). The final two indicators of

inclusiveness measure this provision by assessing the proportion of sheltered bus stops and the number of public toilets respectively.

5.1.8 Indicators of maintenance

Indicators measuring the maintenance of an area are commonly used by practitioners, and increasingly policymakers, in the management of public spaces (Carmona *et al.*, 2004; ODPM, 2005b; 2005c). Examples of such indicators relate to the level of litter, the prompt removal of graffiti and weed and leaf clearing (Chartered Institute of Housing, 1997; Cheetham, 1994; Environmental Campaigns Limited [ENCAMS], 2005; ODPM, 2005c). In order to use a selection of indicators which reflect those indicators in use in practice, three indicators of maintenance were selected (see Table 5.8). The first measures the average condition of the pavement per street. This was developed from guidance on the condition of footways and walking paths (after Atkinson, 1997, pp. 142-153, p. 190). The second indicator measures the degree of litter in a street. This indicator is based on guidelines provided by ENCAMS for assessing the degree of litter in a street with visual examples (ENCAMS, 2006). These guidelines consisted of visual aids to inform the researcher to minimize subjectivity when assessing the maintenance of the built environment. They were adapted to create specific guidance for the researcher to follow which is provided in Appendix B. The final indicator attempts to capture the level of maintenance that households devote individually to their homes and gardens, as opposed to that of the publicly maintained street. It measures the overall condition of homes and gardens in comparison to the rest of homes and gardens in the street.

The first two indicators provide a snapshot of the maintenance of any one street, as they are strongly dependent on the maintenance services provided by the council (Urban Task Force, 1999). As and where applicable, these services, such as refuse collection, are taken into account during the site survey.

Table 5.8 Indicators of maintenance

What is the variable measuring?	Indicator	Source	Scale of indicator
Condition of the pavement	Assessment of condition of pavement by street (according to the researcher)	Site survey	Street
Degree of litter	Assessment of quantity of litter by street (according to the researcher)	Site survey	Street
Overall condition of homes and gardens	General condition of homes and gardens compared to rest in the street (according to the researcher)	Site survey	Street

5.1.9 Indicators of natural surveillance

Existing indicators of safety range from actual crime figures to questions of perceptions of crime and perceived safety (The Question Bank, 2001; DETR, 1999; ODPM, 2005c). To avoid confusion in this research, indicators measuring feelings of safety were included only as part of the antecedents of social cohesion. While it could be argued that the inclusion of such indicators is relevant here, it would be inappropriate to employ the same indicators as part of both features of quality of the built environment and social cohesion.

Indicators of physical safety are used by organizations such as the international Crime Prevention through Environment Design (CPTED), whose measures include natural surveillance and features that clearly demarcate public and private space (Jacobs, 1961; CPTED Watch, 2006; Carmona *et al.*, 2003). In the UK, Secured by Design follows principles similar to those of CPTED, advocating measures of crime prevention such as natural surveillance and active and self-policing routes (Association of Chief Police Officers Crime Prevention Initiatives Limited [ACPO], 2004; Home Office and ODPM, 2004). The widespread adoption of such indicators in theory and practice is reflected in the selection of one representative indicator in this research (see Table 5.9). This indicator measures the proportion of active building frontage per street. Appendix B provides guidelines, adapted from Llewelyn-Davies, on how to distinguish active from inactive (or dead) frontage (2000).

Table 5.9 Indicator of natural surveillance

What is the variable measuring?	Indicator	Source	Scale of indicator
Natural surveillance	Proportion of active building frontage per street	Site survey	Street

5.1.10 Indicators of the character of a place

It is commonly stated that a high quality neighbourhood, or public space, needs to have a character or distinctiveness that sets it apart from other places (Urban Task Force, 1999; Llewelyn-Davies, 2000; CABE and DETR, 2000). However, it is difficult to operationalize this concept into indicators because of the abstract terms in which the concept is described, the subjectivity involved in its assessment, and the differing nature of character in different neighbourhoods. Features that reflect the locality are sometimes used as indicators, such as local building materials, forms and traditions and ornamentation (Llewelyn-Davies, 2000; CABE and DETR, 2000). However, such indicators measure the built environment at the individual building level which is outside the scope of this research. Furthermore, they require a level of subjectivity in assessing to what extent

these traditions and materials are representative of the area, also requiring local knowledge.

To deal with the subjectivity involved in assessing the character of a place, it is fully acknowledged and incorporated into the indicators employed. The opinions of the residents of the neighbourhood about its character are used as indicators and are listed in Table 5.10. The character of a place is a nebulous concept to deal with and, for this reason, a number of indicators are used to measure it. To capture as much data as possible on how residents assess the character of their neighbourhood, four indicators are used. The first indicator is an introductory question asking residents how they would describe their neighbourhood to someone who is not familiar with it. More detail is probed for by the following three questions which ask residents if their neighbourhood actually has a character, how they would describe it and, finally, what (if anything) makes their neighbourhood different from others.

Table 5.10 Indicators of the character of a place

What is the variable measuring?	Indicator	Source	Scale of indicator
How respondents would describe their neighbourhood to an outsider	Respondents' description of their neighbourhood	Semi-structured interview	Individual
Presence of a character of the neighbourhood	Respondents' opinions on whether their neighbourhood has its own character or not	Semi-structured interview	Individual
Nature of the character of the neighbourhood	Respondents' opinions on what the character of the neighbourhood is	Semi-structured interview	Individual
Distinctiveness of the neighbourhood	Respondents' opinions on what makes their neighbourhood different from others	Semi-structured interview	Individual

5.1.11 Indicators of residents' perceived quality of the neighbourhood

The final indicators measuring the overall quality of the built environment are based on the subjective opinions of the residents. The approach used in dealing with the sense of place and character of the neighbourhood is adopted in the measurement of the quality of the neighbourhood. It was necessary to minimize the amount of subjectivity on the part of the researcher while maintaining the essence of the concept, which is that quality is in the eye of the beholder: and the beholder in the context of this research is the resident in a given neighbourhood. In order to then gauge how people living in the neighbourhoods assess its quality, four indicators were developed (see Table 5.11). The first indicator asks residents in the household survey how they rate their neighbourhood as a place to live, on a five point Likert scale. The next question requires more detail from the resident and asks the smaller sample participating in the semi-structured interview how they would rate the

quality of the neighbourhood. Appendix C shows that more questions were asked of interviewees in relation to why they gave their neighbourhood this score and their opinion as to what it is that makes up a high quality neighbourhood. However, the nature of these questions (which were related to the interviewees' neighbourhoods or were answered in specific reference to their neighbourhoods) prevented them from inclusion as indicators here. Together, the indicators employed attempt to capture the hazy and imprecise nature of this facet of the concept of quality.

Table 5.11 Indicators of perceived quality of the neighbourhood

What is the variable measuring?	Indicator	Source	Scale of indicator
Rating of neighbourhood as a place to live	Respondents' opinions on how they would rate their neighbourhood as a place to live	Household survey	Household
Rating of quality of the neighbourhood	Respondents' rating of their neighbourhood on a scale of 1-10	Semi-structured interview	Individual

5.2 Indicators of social cohesion

In Chapter Three, the inter-related dimensions of social cohesion were identified for the purposes of this research. These seven dimensions, listed below, have been operationalized into indicators which have been developed to measure the concept of social cohesion. These social indicators are based on the subjective perceptions and behaviours of residents (Goodchild and Cole, 2001) and the data is collected by using questions in the household survey and semi-structured interviews (outlined in detail in Chapter Four).

- Social interaction
- Social networks including networks of mutual support
- Sense of community in terms of social order and common norms
- Level of participation in organized activities
- Level of trust and reciprocity
- Feelings of safety
- Extent of a sense of place attachment

5.2.1 Indicators of social interaction

Social interaction is a commonly examined concept in empirical research (Chan *et al.*, 2006; Buckner, 1988; Stafford *et al.*, 2003; Lev-Wiesel, 2003) and is operationalized in different ways. It can be argued that there are two broad ones in which social interaction is

measured in social sciences research: firstly, through observation techniques to examine interaction firsthand (Gehl *et al.*, 2004; Raman, 2005; Whyte, 1980) and secondly by proxy, through questions about respondents' levels of social interaction (Skjaeveland *et al.*, 1996; Campbell and Lee, 1992; Harpham *et al.*, 2002; Ellaway *et al.*, 2001; Bullen and Onyx, 2005; Park and Roberts, 2002). The latter technique of creating proxy measures of social interaction was adopted because, if observation techniques were adopted, there would be no way of ensuring that the social interaction measured involved residents alone. A small-scale pilot study conducted as part of this research in Grandpont situated close to Oxford city centre found that many people using the streets in that neighbourhood did not reside there and were using them as through routes in and out of the centre.

Existing indicators of social interaction using a proxy vary depending on the nature of the interaction, and the groups of people with which the interaction takes place, under scrutiny. Furthermore, there is no consistency in the wording used about social interaction so harmonization of indicators is not always clear-cut. The indicators adopted for this research are listed in Table 5.12.

Table 5.12 Indicators of social interaction

What is the variable measuring?	Indicator	Source	Scale of indicator
Positive social interaction (1)	How many of your neighbours would you say that you see socially on average once a week?	Household survey	Household
Positive social interaction (2)	How many of your neighbours would you say that you have a chat with/greet?	Household survey	Household
Positive social interaction (3)	How many of your neighbours would you say that you would ask to borrow food/ tools from?	Household survey	Household
Positive social interaction (4)	How many of your neighbours would you say that you know by name?	Household survey	Household
'Negative' social interaction (1)	How many of your neighbours would you say that you have no contact with?	Household survey	Household
'Negative' social interaction (2)	How many of your neighbours would you say that you avoid contact with?	Household survey	Household

In order to measure the nature and extent of social interaction taking place in the neighbourhood, both positive and negative, a number of indicators were adopted. It is common for multiple indicators to be used to measure positive social interaction in empirical research (see Buckner, 1988; Campbell and Lee, 1992; Ellaway *et al.*, 2001). The negative aspects of social interaction are not commonly focused upon in empirical research, in part because it focuses on interaction within people's existing social networks, often of a positive nature (Park and Roberts, 2002; Stafford *et al.*, 2003),

although there are some exceptions (Buckner, 1988; Skjaeveland *et al.*, 1996). Both positive and negative aspects of social interaction are relevant to this research because evidence does not suggest that the social interaction of residents in neighbourhoods is consistently positive (Skjaeveland *et al.*, 1996).

5.2.2 Indicators of social networks

Social networks are closely related to social interaction; considerable interaction is conducted with people who form parts of each other's social networks, which can be both strong (family, friends, neighbours) and weak (neighbours, acquaintances, people who live in same area etc) (after Granovetter, 1973). The most commonly employed method of ascertaining types of social ties is to identify the group of people under scrutiny. In this research it is arguably apparent that indicators of social interaction are also, to some extent, measuring the nature of weak (as well as strong) social ties or networks existing in the neighbourhood, because of the focus on residents' interaction with their neighbours. To supplement this, Table 5.13 shows those indicators that have been developed to measure the stronger social networks of friends and family.

Table 5.13 Indicators of social networks

What is the variable measuring?	Indicator	Source	Scale of indicator
Extent of socialising in the neighbourhood	Do you regularly see friends and family socially within your neighbourhood?	Household survey	Household
Network of friends and family	Not counting the people you live with, how often do you see friends and relatives?	Household survey	Household
Network of friends and family within the neighbourhood	Of these friends and relatives, how many of them live in your neighbourhood?	Household survey	Household

A criticism that can be levelled at all three of these indicators is that they answer double-barrelled questions (Bryman, 2001), both friends and family living in a neighbourhood when perhaps, the response apply to only one group. This was taken into account and the two-pronged questions remained, due to constraints on the number of questions, but more importantly, to the reasoning that this research focuses on the stronger ties, whether they are friends, family or both, or the absence of them. Therefore, such a distinction was not important. It is not uncommon for such double-barrelled questions to be used in social sciences research: the two indicators measuring the network of friends and family were developed from similar questions from the 2000 General Household Survey (Walker *et al.*, 2001).

5.2.3 Indicators of sense of community

There are numerous examples of indicators in empirical research which seek to measure sense of community, all differing slightly, depending on the focus of the research. Buckner (1988, p. 783) uses indicators relating to loyalty to, and the sense of fellowship between, fellow residents, whereas Ellaway *et al.*, adopting Bucker's indicators, omit this latter indicator (2001, p. 2304). Elsewhere, sense of community is measured through dimensions of membership or feeling of belonging, influence in terms of making a difference to a group, the integration and reciprocal fulfilment of needs in a group, and shared emotional attachment (McMillan and Chavis, 1986; Malone and Dooley, 2006).. Indicators of *psychological* sense of community focus on shared emotional connections, membership of a community and fulfilment of needs (Proescholdbell *et al.*, 2006), but can also incorporate social bonds and a sense of place attachment ((Tartaglia, 2006). In an attempt to capture the diversity of these indicators (and taking into account those included within other dimensions of social cohesion), Table 5.14 lists those indicators used to measure the sense of community. The focus of this research is most similar to the indicators of sense of community developed by Buckner; these relate to the social order and common norms in a neighbourhood, rather than to more active emotional connections and the fulfilment of needs of non-spatially based communities. Furthermore, the definitions of sense of community provided by McMillan and Chavis, Proescholdbell *et al.* and Tartaglia are too broad within the context of this research, as they encompass other dimensions of social cohesion, such as place attachment. For these reasons, indicators ask pointed questions about feelings of pride towards, the friendliness of, and sense of community in the neighbourhood, as well as the extent to which people look out for each other and how well people from different backgrounds get on with one another.

Table 5.14 Indicators of sense of community

What is the variable measuring?	Indicator	Source	Scale of indicator
Feelings of pride in the neighbourhood	How strongly do you agree or disagree with the statement: 'I am proud of this neighbourhood'?	Household survey	Household
Social order (1)	How strongly do you agree or disagree with the statement: 'This is a place where neighbours look out for each other'?	Household survey	Household
Social order (2)	How strongly do you agree or disagree with the statement: 'This is a friendly neighbourhood'?	Household survey	Household
Social order (3)	How strongly do you agree or disagree with the statement: 'People from different backgrounds get on well in this neighbourhood'?	Household survey	Household
Social order (4)	How well would you say that people in your neighbourhood get on together?	Semi-structured interview	Individual
Sense of community	Thinking about your neighbourhood, how strong a sense of community is there where you live?	Semi-structured interview	Individual

5.2.4 Indicators of participation in organized activities

Indicators of participation in organized activities employed in empirical research are very similar, arguably differing only in the activity examined and period of time in which participation takes place. It is common for indicators to ask whether respondents take part in, or are members of, a particular organization, such as a religious group (Lochner *et al.*, 1999; Stafford *et al.*, 2003; Park and Roberts, 2002; Chan *et al.*, 2006; Harpham *et al.*, 2002), sports and leisure groups (Park and Roberts, 2002; Bullen and Onyx, 2005) or neighbourhood groups (Park and Roberts, 2002). There is no consistency in the chosen period of time in which participation takes place: Bullen and Onyx (2005) specify the last six months while Park and Roberts (2002) ask respondents about the last twelve months. Stafford *et al.* avoid this by asking people if they participate regularly in an activity (2003). Taking all this into account, the indicators employed in this research to measure participation in organized activities also use the term 'regularly', and specify to the respondent that this indicates once a month (see Table 5.19). The indicators selected reflect both the common organizations and groups on which social science empirical researchers focus, as well as the breadth of organized groups in any one neighbourhood. It should be noted, however, that participation in all activities will be dealt with together in the analysis because of the potentially small proportions of respondents who might take part in any one activity, especially in neighbourhoods where such activities are not provided, which will also be taken into account. No one activity is considered to be more

important than another in the analysis as participation in any number of these activities that is of interest. Furthermore, while Table 5.15 shows the indicators relating to participation within the neighbourhood, it will be possible in the analysis to explore whether respondents participate in organized activities outside the neighbourhood as these data were also collected.

Table 5.15 Indicators of participation in organized activities

What is the variable measuring?	Indicator	Source	Scale of indicator
Participation in sports groups	In your free time, which of the following activities do you undertake regularly: sports/ exercise groups (including taking part, coaching or watching)	Household survey	Household
Participation in adult education groups	...Adult education groups	Household survey	Household
Participation in community/ neighbourhood groups	...Local community or neighbourhood groups (including residents' associations, parent-teacher associations	Household survey	Household
Participation in support groups	...Support groups (e.g. health and welfare groups)	Household survey	Household
Participation in religious groups	...Religious groups	Household survey	Household
Participation in other groups	...Other groups	Household survey	Household

5.2.5 Indicators of trust and reciprocity

Indicators commonly used in household surveys ask respondents to report their level of trust, or how their level of trust, or that in other residents, is conveyed in a particular situation. For example, respondents are asked in the national British Social Attitudes Survey how trustworthy people are in general (National Centre for Social Research, 2002; Kawachi *et al.*, 1997), and, in the General Household Survey 2000/01, respondents are asked how many people they trust in their neighbourhood (Stafford *et al.*, 2003; Walker *et al.*, 2001; Sampson *et al.*, 1997). Other research, measuring trust and reciprocity together, asks respondents about particular situations, such as if they often borrow something from their neighbour if it was needed for cooking, for example, (Skjaeveland *et al.*, 1996), or if respondents could ask a neighbour for help if they needed it (Buckner, 1988; Bullen and Onyx, 2005). These indicators are closely linked to the networks of mutual support discussed in Chapter Three within the dimension of social networks, as well as levels of participation in support groups (Section 5.2.4). It could be argued that to measure networks of mutual support accurately, the extent of social

networks should be also taken into account (after Unger and Wandesman, 1985). This will be done in the analyses where the extent of social networks can be dealt with as an intervening variable. The indicators employed in this research to measure trust and reciprocity are shown in Table 5.16.

Table 5.16 Indicators of trust and reciprocity

What is the variable measuring?	Indicator	Source	Scale of indicator
Norms of trust and reciprocity in the neighbourhood	How strongly do you agree or disagree with the statement: 'This is a place where neighbours look out for each other'?	Household survey	Household
Generalized trust in the neighbourhood	Would you say that you trust people in your neighbourhood?	Semi-structured interview	Individual
Networks of mutual support	How strongly do you agree or disagree with the statement: 'If I needed a favour, I could rely on someone in this neighbourhood to help me?	Household survey	Household

The first indicator measures norms of trust and reciprocity commonly felt in the neighbourhood, developed from an indicator used in the General Household Survey 2000 (Walker *et al.*, 2001). The second indicator is also based on a question from the same survey, and is selected to capture respondent's general feelings about the levels of trust in their neighbourhood. The final indicator is designed to capture respondents' feelings of trust and reciprocity in relation to a more specific situation involving networks of mutual support.

A further indicator included in the positive dimension of social interaction (Section 5.2.1) – 'how many of your neighbours would you say that you would ask to borrow food/ tools from' – was considered for inclusion in this dimension of social cohesion as an indicator of reciprocity. However, it was considered to be problematic because it assumes that there would be situations where one needs to borrow food or a tool. In the light of extended supermarket and foodshop opening hours, this indicator arguably would not be a robust measure of reciprocity. For this reason, the wording of the question, specifically the word 'would', indicates that it is a hypothetical situation which respondents are asked to envisage when answering this question that might never arise.

5.2.6 Indicators of feelings of safety

Indicators of safety have already been outlined in relation to the physical environment (Section 5.1.9) and they are included here because Chapter Three outlines the important part that safety has to play in the social cohesion in a place. Indicators of perceived safety and perceptions of crime in existing research commonly feature at least one of the two following: 'How safe do you feel walking alone in this area during daytime?' and 'How safe

do you feel walking alone in this area after dark?' Both of these indicators are included in the General Household Survey (Walker *et al.*, 2001), and the latter is used in the Poverty and Social Exclusion Survey (Gordon *et al.*, 2000). The latter of these indicators was selected for the research with the option for respondents to indicate if they never go out alone after dark. Other indicators not selected for the research, because of the difference in scale, focus on individuals' feelings of safety when in their home (ibid.). It could also be argued that indicators of safety in this research should also measure physical safety in relation to, for example, road traffic or anti-social behaviour (after Nash and Christie, 2003; Barton *et al.*, 2003; CABE and DETR, 2000; Loukaitou-Sideris and Stieglitz, 2002). For the purposes of this research, general perceptions of safety and perceived crime were decided to be sufficient indicators, as specific crimes or types of anti-social behaviour have not been specifically linked with the quality of the built environment in the theory. The indicators of safety used are listed in Table 5.17.

Table 5.17 Indicators of feelings of safety

What is the variable measuring?	Indicator	Source	Scale of indicator
Perceived safety	Respondents' opinions on their feelings of safety in the neighbourhood	Household survey	Household
Perceived crime	Respondents' opinions on the level of crime in the neighbourhood	Household survey	Household

5.2.7 Indicators of sense of place attachment

Existing indicators of the sense of attachment that people have to a place are arguably related to those measuring sense of belonging. This means that there is some crossover between this dimension and sense of community: some definitions of sense of community identify place attachment as an indicator (McMillan and Chavis, 1986). The reason behind this is arguably the socio-spatial facet to social cohesion, discussed in Chapter 3 (Section 3.3.5; after Madanipour, 1998). Residents can arguably feel attached to a place and/or to the people who reside in that place (after Talen, 1999; Riger and Lavrakas, 1981). Indicators used in existing research measuring this dimension ask respondents if they feel that they belong to the neighbourhood or if they feel part of the area (Bollen and Hoyle, 1990; Buckner, 1988; Ellaway *et al.*, 2001; Stafford *et al.*, 2003). Alternatively, respondents are asked if they feel theirs is a close-knit neighbourhood ((Sampson *et al.*, 1997). This latter indicator was rejected for this research because it focuses on the people living in the neighbourhood, rather than on its socio-spatial characteristics. The indicators are listed in Table 5.18.

The first indicator is also included as measuring the dimension of sense of community (Section 5.2.3). Feelings of pride towards a neighbourhood arguably reflect how attached one feels to that neighbourhood (after Keller, 1968). A caveat needs highlighting here; it may not be the case that respondents equate feelings of pride in, with feelings of attachment to, their neighbourhood. For this reason, two further indicators explicitly measuring the respondents' feelings of belonging and feelings of attachment to the neighbourhood are also included. Two variables are used to measure more than one dimension of social cohesion. Where this is the case, there is no double-counting: where variables are highly correlated in the statistical analysis, the correlation is noted but the reliability and concurrent, construct and content validity of the statistical test maintained (Greenstein, 2006).

Table 5.18 Indicators of sense of place attachment

What is the variable measuring?	Indicator	Source	Scale of indicator
Feelings of pride in the neighbourhood	How strongly do you agree or disagree with the statement: 'I am proud of this neighbourhood'?	Household survey	Household
Feelings of belonging to the neighbourhood	How strongly do you agree or disagree with the statement: 'I feel that I belong to this neighbourhood'?	Household survey	Household
Feelings of attachment to the neighbourhood	How attached do you feel to your neighbourhood?	Semi-structured interview	Individual

5.3 Intervening variables

In order to fully answer this study's principal research question – the relationship, if any between the quality of the built environment and social cohesion in neighbourhoods in England – other factors and influences which may have also have an influence on social cohesion need to be included in the analyses. For this reason, a third set of indicators was developed (Table 5.19). These indicators were, on the whole, identified from theoretical discussions and are related to the individual characteristics of the respondent or interviewee. They include the social characteristics – age, sex and ethnic group – of residents, and their socio-economic characteristics such as individual and household income. Other intervening variables relate to the characteristics of the household such as the size and composition of the household and car ownership, as well as length of residence and plans that residents may have to move house. Factors related to the accommodation such as housing type, access to garden space and tenure, and to the wider, urban layout are also included. Other variables are controlled for, depending on the analyses, and are reported where they are included.

This is not an exhaustive list of the intervening variables as other diverse factors such as workplace location, distance to work, journey to work time and individual accommodation layout may also influence dimensions of social cohesion. The collection of data relating to such diverse intervening variables would have involved intensive primary research and analysis which was not possible within the timeframe of the research.

Table 5.19 Indicators of intervening variables

What is the variable measuring?	Indicator	Source	Scale of indicator
Social characteristics of respondent	Age	Household survey	Individual
	Sex		
	Ethnic group		
Socio-economic characteristics of respondent	Employment status	Household survey	Individual
	Individual income		
	Social class		
	Household income		Household
Household characteristics	Household size	Household survey	Household
	Household composition		
	Car ownership		
Residential turnover	Length of residence	Household survey	Household
	Plans to move house		
Tenure	Tenure on household property	Household survey	Household
Accommodation characteristics	Accommodation type	Household survey	Household
	Access to garden		
Urban layout	Predominant street pattern	Ordnance Survey maps	Street/ neighbourhood

5.4 Conclusions

This chapter has provided detailed descriptions of the individual indicators used to measure the quality of the built environment, social cohesion and intervening influences. Each section discussed what is being measured and the appropriate scale for each indicator, as well as the source of the data. The indicators measuring quality of the built environment use sources such as Ordnance Survey maps, AddressPoint data, bus timetables and, primarily, the site survey, while those indicators measuring social cohesion are part of the household survey and semi-structured interview. Together, these indicators operationalize the concepts of quality of the built environment and social cohesion in a reliable and valid manner, which permits the statistical analysis and detailed

examination of the concepts under scrutiny. It should be noted that the nature of the indicators involved in the analysis preclude the formation of one overall indicator of high quality and one indicator of social cohesion. While such 'scores' might have been of some interest, the omission of overall indicators of the two dimensions does not detrimentally affect the capacity of the indicators, or the analyses, to address the aims of the research. The following chapter provides descriptive data about the samples and the neighbourhoods in which they reside.

Chapter Six

Characteristics of the Sample and Study Sites

Chapter Six – Characteristics of the Sample and Study Sites

6.1 Introduction

To examine the influence of the quality of the built environment on social cohesion in English neighbourhoods, it was necessary to select an appropriate methodology to adequately measure and analyse it. A large-scale multivariate investigation which employs a combination of quantitative and qualitative research methods provides the researcher with methodological flexibility through multiple methods of data collection and analysis. To examine relationships between the built environment and social cohesion in a spatial setting, a sample of residents, who lived within six physically identified neighbourhood boundaries, was selected. This chapter provides a description of the characteristics of the research participants and the built environments within which they live. It focuses on:

- General profile data, including:
    - population size
    - social characteristics such as age, gender and ethnic group
    - socio-economic characteristics such as income
    - household characteristics including household size and composition
    - tenure
    - residential turnover, indicated by length of residence and residents' plans to move house
- General characteristics including size and layout of the neighbourhoods, housing types and transport infrastructure

The general profile data of the population is provided, where possible, by Census data, in order to provide a full picture of the characteristics of the population of the neighbourhood as a whole, in conjunction with data relating to the sample collected in this research. The boundaries of the neighbourhoods delineated according to physical features do not correspond to the administrative boundaries used by the Office for National Statistics (ONS) in their collection of the Census data. Care has therefore been taken to ensure that accurate data is taken from the Census in order to provide a broader context within which the sample data can be examined. The general physical characteristics are provided by the site survey and Ordnance Survey map data.

Finally, descriptive analyses provide findings for the sample in terms of the features of quality of the built environment present where those residents in the sample live, and the levels of social cohesion experienced by the sample. These analyses are for descriptive purposes only, to provide background information about the sample. They are led by the scale of the indicator. In some cases, the data are at the neighbourhood level; however, it is important to point out that the neighbourhoods are not compared in these analyses or in this research.

6.2 Selecting the study sites

Chapter Four highlighted that this research is linked to the national CityForm research project, which is examining the influence of the urban form on sustainability in the cities of Edinburgh, Glasgow, Leicester, Oxford and Sheffield. This was a distinct advantage for this research, as it meant that a much larger sample could be targeted for both the household survey and the semi-structured interviews. The nature of this research, in essence, means that it can be conducted for any sample in the UK. There is no prerequisite minimum level of social cohesion that must occur in a street or neighbourhood, nor must there be a particular number of features of quality of the built environment. It was therefore to some extent irrelevant from where in England the sample was drawn; however, due to the part that the concept of 'neighbourhood' has to play in a large number of the indicators developed, it was considered useful to select a sample from a number of study sites according to one main criterion: that the spatial area selected could be physically delineated as a neighbourhood. The decision to select six neighbourhoods, and for those neighbourhoods to be in England, was therefore, to some degree, arbitrary. The location of the five cities examined in the CityForm research precluded the selection of Edinburgh and Glasgow as study sites as the cost involved in conducting the physical site surveys was prohibitive. Furthermore, the selection of one Scottish city and one English city was considered to add complexity to the research as a comparison of Scottish and English neighbourhoods would inevitably have had to play a part in the research. This was not an aim of the research, and so to be able to focus on the relationship between the quality of the built environment and social cohesion without having to control for more variables, it was decided that a total of six study sites, in two cities in England, Oxford and Sheffield, would be selected. These neighbourhoods, in accordance with the larger CityForm study areas, were situated in the city centre, suburbs and 'in-between' areas of each city. Again, as the structure and methods of this research could be applied to any urban settlement in England, the choice of these particular examples of urban form was to some extent arbitrary, but was considered advantageous because of the large sample targeted. Boxes D.1-D.6 in Appendix D provide some

background information about the population, the sample and the built environment, in terms of socio-economic data, the size and layout of the neighbourhood, the transport infrastructure and a breakdown of the housing stock. The following section describes the research participants and the built environment within which they live.

6.3 The sample: socio-economic characteristics

This section provides some information about the sample and, where applicable, the same information is provided about the population from which the sample was drawn. This latter data is taken from the 2001 Census, which, at its most disaggregated level, is provided for output areas, which are made up of approximately 125 households (ONS, 2005). Where the sample and population data are provided together, the sample data is aggregated by study site, and the Census data is aggregated for the corresponding number of output areas for comparisons to be more easily made. Table 6.1 provides some characteristics of the sample and shows the proportion of men and women who responded to the household questionnaire survey. This indicates that just over 60% of the sample was women. This is also illustrated in Table 6.2, which provides the breakdown of the responses by gender for each study site, and the corresponding data from the 2001 Census. This shows that in each study site the proportion of women who responded to the household questionnaire was larger than the proportion who responded to the Census.

Table 6.1 Characteristics of the sample as a whole (%)

Characteristics of residents (%)	Total sample
Male	39
Female	61
Age 16-24 yrs	5
Age 25-44 yrs	37
Age 45-64 yrs	31
Age 65+ yrs	27
White	91
Black	3
Asian	3
Other	3
Employed	55
Unemployed	2
Retired	31
Student	4
Own house	61
Rent house privately	23
Rent house publicly	16
Household income less than £10,000	17
Household income £10,000-£19,999	14
Household income £20,000-£29,999	12
Household income £30,000-£49,999	19
Household income £50,000-£79,999	10
Household income £80,000 or more	3

Table 6.2 Gender of the sample and Census respondents by study site (%)

	Male	Female
Grandpont sample	35	65
Grandpont Census	52	48
Jericho sample	36	64
Jericho Census	50	50
Blackbird Leys sample	48	52
Blackbird Leys Census	49	51
Netherthorpe sample	40	60
Netherthorpe Census	51	49
Walkley sample	40	60
Walkley Census	50	50
Fulwood sample	38	62
Fulwood Census	48	52

The age of the sample is shown in Table 6.1. This suggests that a small proportion of the sample was between the ages of 16 and 24, and that over a quarter of the sample was over the age of 65. Table 6.3 shows the age group breakdown of the samples per study site alongside the breakdown of Census respondents. This shows that the research participants were, on the whole, older than the population and that a consistently lower proportion of 16-24 year olds responded to the sample. This may have been due to the timing of the survey which was distributed in the summer, when, for example, many students leave their place of study for the holiday period.

Table 6.3 Age of the sample and Census respondents by study site (%)

	16-24 years	25-44 years	45-64 years	65+ years
Grandpont sample	6	45	24	15
Grandpont Census	26	37	16	8
Jericho sample	6	42	35	17
Jericho Census	23	39	17	12
Blackbird Leys sample	4	34	36	25
Blackbird Leys Census	12	32	20	10
Netherthorpe sample	6	31	26	37
Netherthorpe Census	14	32	19	19
Walkley sample	10	46	27	17
Walkley Census	17	37	20	12
Fulwood sample	0	27	32	41
Fulwood Census	7	24	28	23

Table 6.1 also shows the proportions of research participants according to their ethnic group. This suggests that the majority of the sample was white, with 3% of the sample making up the black, Asian and 'other' groups. Table 6.4 shows the proportions of sample respondents according to their ethnic group for each study site and, with reference to the Census data, the same data for the population. This shows that the proportion of white residents were by and large the same. There were some differences between the

proportion of 'Asian' and 'other' residents in the sample and the population, particularly in the Netherthorpe study site. It is not possible to compare the data relating to the 'Mixed' group as this data was not collected in the questionnaire.

Table 6.4 Ethnic group of sample and Census respondents by study site (%)

Study Site	White	Mixed	Black	Asian	Other
Grandpont sample	89	---	2	2	7
Grandpont Census	87	4	2	6	1
Jericho sample	89	---	0	4	7
Jericho Census	90	3	1	5	1
Blackbird Leys sample	86	---	13	0	1
Blackbird Leys Census	87	2	10	1	0
Netherthorpe sample	82	---	5	0	13
Netherthorpe Census	80	4	6	8	2
Walkley sample	96	---	2	0	2
Walkley Census	92	3	2	2	1
Fulwood sample	97	---	0	1	2
Fulwood Census	92	1	0	5	2

Table 6.1 also shows the proportions of research participants according to their economic status. This suggests that the majority of the sample (55%) was employed, and over 30% of the sample was retired. Table 6.5 shows the proportions of the sample according to the economic status for each study site and, with reference to the Census data, the same data for the population. It should be noted that the percentages in this table (or Table 6.1) do not add up to 100 as only a selection of the indicators measuring economic status have been taken from the Census.

Table 6.5 Economic status of sample and Census respondents by study site (%)

Study Site	Employed	Unemployed	Retired	Student
Grandpont sample	59	2	19	3
Grandpont Census	43	2	4	19
Jericho sample	69	1	19	8
Jericho Census	42	2	5	19
Blackbird Leys sample	53	1	22	0
Blackbird Leys Census	58	3	9	3
Netherthorpe sample	31	4	40	9
Netherthorpe Census	47	18	16	17
Walkley sample	59	3	19	5
Walkley Census	42	3	7	11
Fulwood sample	42	0	48	1
Fulwood Census	39	1	15	4

This shows that there was some variation in the proportion of employed residents in the sample compared to the population, while there were large differences between the

proportions of retired residents in the sample and the population. The proportions of students in the sample were on the whole lower in the sample than in the population.

The different tenures of property held by sample are presented in Table 6.1 and, for each study site, Table 6.6. These three indicators, taken from the Census, are made up of a number of variables. 'Own house' refers to those respondents who indicated that they own their property outright, part own it or own it with a mortgage or loan. 'Rent house privately' refers to those respondents renting from a private landlord or letting agency, employer, relative or friend (or other). Finally 'Rent house publicly' refers to those respondents who rent their property from the council or local authority, housing association, housing co-operative, charitable trust or registered social landlord (RSL). However, as these indicators are a selection of those employed in the Census, the proportions may not add up to 100. There is some variation between the different tenures in the sample and those in the population, but on the whole, the patterns in tenure for the population are reflected in the sample. The average length of residence of the sample at the time of the questionnaire was 13 years and 34% of the sample reported planning to move house in the next few years.

Table 6.6 Tenure of property for sample and Census respondents by study site (%)

Study Site	Own house	Rent house privately	Rent house publicly
Grandpont sample	73	24	2
Grandpont Census	50	36	8
Jericho sample	34	47	19
Jericho Census	40	36	24
Blackbird Leys sample	44	0	56
Blackbird Leys Census	44	4	49
Netherthorpe sample	24	10	66
Netherthorpe Census	19	9	71
Walkley sample	67	19	14
Walkley Census	54	23	22
Fulwood sample	77	3	20
Fulwood Census	78	4	18

Table 6.1 also shows the household income for the sample. The table shows that 17% of the sample had a household income of £10,000 or less, with 31% in total reporting a household income of £20,000 or less. Over 30% of the sample reported a household income of over £30,000. It should be noted that 25% of the sample did not respond to this question.

Table 6.7 shows the breakdown of the different housing types for the sample which indicates that the majority of the housing stock which the sample was residing in at the time of the questionnaire was made up of terraced housing, with large proportions of semi-detached housing and flats. Table 6.8 shows the same information in more detail, by

study site, with the same data for the population. While there are some disparities between the proportions of different housing type for the sample and the population, the patterns of housing type in the study sites are generally repeated in both sets of data.

Table 6.7 Housing type for total sample (%)

Housing type (%)	Total sample
Detached	8
Semi-detached	29
Terraced	36
Flat	27

Table 6.8 Housing type for sample and Census respondents by study site (%)

Study Site	Detached	Semi-detached	Terraced	Flat
Grandpont sample	2	9	70	19
Grandpont Census	3	6	55	36
Jericho sample	3	6	52	37
Jericho Census	2	6	49	40
Blackbird Leys sample	8	33	28	29
Blackbird Leys Census	5	27	40	28
Netherthorpe sample	1	19	4	77
Netherthorpe Census	1	17	10	72
Walkley sample	7	14	76	3
Walkley Census	9	24	56	10
Fulwood sample	15	60	2	23
Fulwood Census	19	53	5	22

Finally, the indices of multiple deprivation (IMD) were also consulted to provide further contextual information about the study sites. Appendix D shows the full table with all the Census output areas and their corresponding IMD scores and ranking, where 1 is the most deprived output area in the country and 32,482 is the least deprived (ODPM, 2003b, 2004). To relate the IMD scores to the neighbourhoods, which are made up of a number of output areas, the most deprived output area(s) in each neighbourhood is selected for the purpose of this section: a full breakdown of the scores for the neighbourhood is provided in Appendix D. Table 6.9 shows that Netherthorpe is the most deprived of the six study sites, with its output areas scoring 54.43 and 46.53, giving it rankings of 1541 and 2954 respectively out of 32,482. The output areas in the Blackbird Leys neighbourhood make it the next most deprived study site, scoring 33.60 and 37.87 with a ranking of 6738 and 5275 respectively. The least deprived neighbourhood overall is Fulwood with the majority of its output areas ranked over 30,000, except for two output areas which were ranked at 15128, as shown in the table.

Table 6.9 Indices of Multiple Deprivation (IMD) scores and ranking per neighbourhood

IMD	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Score	13.57	18.5	37.87	54.43	20.54	18.34
Ranking [1]	19643	14994	5275	1541	13454	15128

[1] where 1 is the most deprived and 32,483 is the least deprived

6.4 Features of quality of the built environment in the study sites and the sample

This section presents the data measured by each indicator of quality of the built environment according to the scale of that indicator. The first set of data relates to the indicators measuring density.

6.4.1 Residential density

The majority of these indicators measure density at the neighbourhood or study site scale, which are presented in Table 6.10. In Chapter Two, residential densities advocated in theory, policy and practice showed a range of household densities (dwellings per hectare which, for the purpose of providing some contextual information, are compared here to household per hectare [although this should be treated with caution as they are not directly comparable]).

Table 6.10 Indicators of residential density of the built environment by neighbourhood

Indicator of density	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Gross density – persons per ha	77.7	110.6	88.09	69.7	96.77	52.25
Gross density – households per ha	31.33	57.01	39.33	38.72	49.12	24.64
Ratio of built land to open space	2.56	2.44	10.79	3.93	29.78	17.95
Net density – persons per ha	108.08	156.02	96.26	87.44	100.02	55.16
Net density – Households per ha	43.58	80.42	42.97	48.58	50.77	26.02
Persons per household	2.48	1.94	2.24	1.8	1.97	2.12

The numbers of households per hectare in the sample study sites are, on the whole, at the lower end of the scale of desirable residential density for the UK with only Jericho (and Netherthope, barely) reaching the residential density advocated by current policy. Jericho has the highest gross and net residential densities of all the neighbourhoods, and the lowest ratio of built land to open space (2.44:1) and the one of the lowest average number of persons per household (1.94). Fulwood has the lowest gross and net residential

densities and has a high ratio of built land to open space (17.95:1) after Walkley (29.78:1). The final indicator measures density at the street level.

Table 6.11 shows the proportions of residents who live in streets of different residential intensity. The largest proportion of residents (39%) live in streets with a relatively low level of street intensity (between 0.11 and 0.20) in relation to the rest of the sample.

Table 6.11 Residential intensity of streets for the total sample (%)

Residential intensity of streets	Total sample (%)
0.00-0.10	10.4
0.11-0.20	38.7
0.21-0.30	18.3
0.31-0.50	22.4
0.50+	10.6

6.4.2 The extent of mixed uses

The indicators measuring the extent of mixed uses are all relevant at the neighbourhood or study site scale and the scores for each neighbourhood are shown in Table 6.12. Of the six study sites, Walkley and Jericho have the largest numbers of key services and facilities with 18 and 11 respectively. The key services and facilities which encompass these indicators are GP surgery, chemist, post office, bank or building society, corner or convenience food shop, supermarket, restaurant or takeaway and newsagent. The smallest number of services and facilities in a study site is shared by Grandpont and Blackbird Leys, with one each.

Table 6.12 Indicators of extent of mixed uses by neighbourhood

Indicator of extent of mixed uses	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
No of services	1	11	1	6	18	5
No of services/ facilities per ha	0.05	0.68	0.08	0.32	0.82	0.1
No of services/ facilities in 400m buffer zone	26	45	12	50	19	6
No of services/ facilities in 400m buffer zone per ha	0.31	0.62	0.12	0.43	0.16	0.05
Ratio of residential to non-residential land	3.26	4.31	12.28	14.12	35.01	33.32
Spread of services/ facilities	0.21	2.06	0.21	0.69	3.51	0.66

Netherthorpe has the largest number of services in the 400m buffer zone around the study site with 50, and Fulwood has the smallest number with 6. While Walkley has the highest number of services and facilities per hectare within its neighbourhood, in the buffer zone it has a far lower number. Jericho has both a high number of services and facilities within and outside the neighbourhood. Grandpont and Jericho have the lowest ratios of

residential to non-residential land (3.26:1 and 4.31:1 respectively) while Walkley and Fulwood have the highest ratios (35.01:1 and 33.32:1 respectively). The method of calculation of the geographical spread of services and facilities per study site is explained in Section 5.1.2, using the mean and the standard deviation of numbers of services and facilities for each neighbourhood (Burton, 1997). Walkley and Jericho scored 3.51 and 2.06 respectively on this indicator, suggesting that the spread of services and facilities in these neighbourhoods was more even geographically than in Grandpont and Blackbird Leys (0.21).

6.4.3 Accessibility

The indicators of accessibility are divided into two because it was not suitable to combine them all into one composite variable, as they measure distinct aspects of the same feature of quality – access to open space and access to public transport. Table 6.13 shows the indicators of accessibility by study site. Walkley has the smallest quantity of open space (0.72 ha) while Grandpont has the largest of all the study sites (5.70 ha). However, Grandpont has the smallest quantity of open space in the buffer zone around the neighbourhood boundary (15.62 ha). Fulwood has 52.14 hectares of open space which constitutes the largest quantity of open space in its buffer zone of all six neighbourhoods.

The second set of indicators of accessibility refers to public transport. Jericho has the smallest number of bus stops (2) while Netherthorpe and Walkley have the most (17 and 14 respectively). Fulwood and Walkley score highest on the indicator measuring spread of bus stops, indicating that the bus stops are better spread geographically across these neighbourhoods than in the lower scoring Oxford neighbourhoods. The final accessibility indicator relates to the average frequency of buses an hour per weekday between the hours of 9am and 5pm. Blackbird Leys and Netherthorpe have the most frequent bus services (20 and 16 buses per hour respectively) and Jericho has the lowest number of buses, with one an hour.

Table 6.13 Indicators of accessibility by neighbourhood

Indicator of accessibility to open space/ transport	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Amount of open space (ha)	5.7	4.69	1.09	3.75	0.72	2.71
Amount of open space in 400m buffer zone (ha)	15.62	33.17	37.18	20.26	25.51	52.14
Number of bus stops	4	2	4	17	14	11
Spread of bus stops	0.631	0.69	0.631	0.95	1.696	3.122
Bus frequency (no per hr)	10	1	20	16	9	6

6.4.4 Connectedness and permeability

There are three indicators measuring the connectedness and permeability of the built environment, the first of which is shown in Table 6.14. Netherthorpe and Jericho score highest on the indicator measuring the degree of connectedness, in terms of the number and type of junctions per neighbourhood (93.03 and 65.31 respectively). Table 6.15 shows the proportions of the sample who live in streets according to the measure of junction connectedness according to the point system outlined in Section 5.1.4 in Chapter Five. This table shows that over 66% of the total sample lived in streets which scored between 3 and 4 on the street connectedness measure, indicating that these streets have, on average, between three to four routes emanating from any junction. Table 6.16 shows the proportion of the sample who live in streets according to the average size of urban blocks per street. The largest proportion (27%) of the sample lived in streets with, on average, 51-100m between junctions, while just under a quarter of the sample lived in streets with urban blocks of approximately 101-200m in length. One fifth of the sample lived in streets where the distance between junctions was over 300m.

Table 6.14 Indicator of connectedness and permeability by neighbourhood

Indicator of connectedness and permeability	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Degree of connectedness per neighbourhood	49.67	65.31	47.73	93.03	53.52	51.51

Table 6.15 Proportion of total sample living in streets according to connectedness of street

Connectedness of streets	Total sample (%)
1 point or less	2
2-3 points	27.6
3-4 points	66.3
4-5 points	2.4
5+ points	0.1

Table 6.16 Proportion of total sample living in streets according to the distance between junctions

Distance between junctions	Total sample (%)
0-50m	11
51-100m	27
101-200m	24
201-300m	18
301-400m+	20

6.4.5 Legibility

The indicators of legibility measured data at the street level. 15% of the sample lived in streets which were assessed as making up a node (see Section 5.1.5 in Chapter Five). Of this 15% (which comprises 128 residents in the sample), Table 6.17 shows the proportions of streets according to the rating of nodes according to the criteria outlined in Chapter Five. This shows that only 8% of those residents lived in streets which were assessed as fulfilling the criteria in Section 5.1.5 very well, whereas the majority of the sample (51%) lived in streets which were assessed as not fulfilling the criteria very well. Table 6.18 shows that the majority of the sample (84%) lived in streets which did not have any kind of landmark, while 15% of the sample lived in streets which had a landmark and 1% of the sample lived in streets with two landmarks.

Table 6.17 Proportion of total sample living in streets according to the node rating exercise

Node rating (0-4 where 0 is low and 4 is high)	Total sample (%)
1	7
2	51
3	34
4	8

Table 6.18 Proportion of total sample living in streets according to the number of landmarks

Number of landmarks per street	Total sample (%)
0	84
1	15
2	1

While the data relating to legibility were collected at the street level, they are also meaningful at the wider area, because, for example, landmarks are visible and meaningful for users at a broader scale than the street, and also because a node is made up of more than one street. Table 6.19 provides contextual background information and shows the scores for each neighbourhood for indicators of legibility. The number of landmarks range between 1 (Walkley) and 10 (Netherthorpe). Such landmarks identified in the fieldwork include churches, residential tower blocks, green space and bridges. The second indicator shows the number of nodes per neighbourhood, according to criteria outlined in Section 5.1.5. Fulwood scored zero on this indicator with no nodes while Netherthorpe scored six. The nodes were also rated according to the assessment criteria referred to earlier: Blackbird Leys and Walkley both scored 3 on this indicator while Grandpont scored lowest, with no applicable score for Fulwood.

Table 6.19 Indicators of legibility by neighbourhood

Indicator of legibility	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Number of landmarks	8	9	3	10	1	4
Number of nodes per neighbourhood	1	3	1	6	3	0
Average rating of nodes per neighbourhood (0-4)	2	2.67	3	2.67	3	-

6.4.6 Attractiveness

The indicators of attractiveness measure it at different scales. Those indicators which measure the attractiveness of the neighbourhood as a whole are listed first in Table 6.20. On average, Jericho and Grandpont in Oxford have the smallest number of trees per neighbourhood while Fulwood has the largest. Grandpont and Jericho have the largest proportion of open space in relation to their total area while Walkley and Fulwood have the lowest (3% and 5% respectively). Table 6.21 shows that the majority of the sample (61%) lived in streets which have 20 or less trees, 35% of whom lived in streets with less than 10 trees. The final indicator, shown in Table 6.22, measured the subjective assessment of the attractiveness of the neighbourhood according to the sample of residents.

Table 6.20 Indicators of attractiveness by neighbourhood

Indicator of attractiveness	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Number of trees per neighbourhood	225	180	470	985	360	1685
Number of trees per ha	11.1	11.17	36.6	53.27	16.31	32.77
Proportion of open space in the neighbourhood (%)	28	29	8	20	3	5

Table 6.21 Proportion of total sample living in streets according to number of trees

Number of trees per street	Total sample (%)
0	1
1-10	34
11-20	26
21-30	13
31-50	13
50-100	8
101-200	4
201-300	0
300+	1

Table 6.22 Indicator of perceived attractiveness for the total sample (%)

Subjective assessment of the attractiveness of the neighbourhood according to the sample	Total sample (%)
Very bad	2
Fairly bad	8
Neither good nor bad	18
Fairly good	45
Very good	27

Table 6.22 shows that 45% of the sample assessed the attractiveness of their neighbourhood as fairly good while 27% assessed it as very good. 10% of the sample assessed the attractiveness of their neighbourhood as fairly to very bad. This last indicator is analyzed separately because it measures a subjective aspect of attractiveness which is distinct from the other physical indicators.

6.4.7 Inclusiveness

The nine indicators measuring inclusiveness measure the built environment at both the street and the neighbourhood scale. Those at the street scale are listed in Tables 6.21-6.26. These tables show the proportions of the sample living in streets according to the relevant indicator. The majority of the sample lives in streets with pavements over 3m in width (Table 6.23); a large proportion of the sample (36%) lives in streets with dropped kerbs at all road crossings (Table 6.24); over 50% of the sample lives in streets where there are ramps are provided where steps occur (Table 6.25); and the majority of the sample live in streets with no primary or secondary seating (80 and 75% respectively [Tables 6.26-6.27]) and with no shelters at bus stops (53% [Table 6.28]).

Table 6.23 Proportion of total sample living in streets according to pavement width

Width of pavement	Total sample (%)
Less than 1m	0
1-2m	2
2-3m	45
3m+	53

The three remaining indicators, which measure inclusiveness at the neighbourhood scale, are listed in Table 6.29. Netherthorpe and Jericho have the lowest scores on the spread of primary seating indicator (0.0451 and 0.0888 respectively) suggesting that the seating is spread geographically better in the other neighbourhoods such as Grandpont which scores highest (0.2295). Jericho and Netherthorpe also score lowest on the spread of secondary seating (0.0573 and 0.066 respectively) while Walkley scores highest with 0.1763. The final indicator, measuring the number of public toilets, shows that none of the neighbourhoods, except Walkley with one, has any public toilets within their boundaries.

Table 6.24 Proportion of total sample living in streets according to proportion of dropped kerbs at road crossings

Proportion of dropped kerbs at road crossings	Total sample (%)
0	25
10-20	3
21-30	3
31-40	1
41-50	23
51-60	0
61-70	6
71-80	2
81-90	1
91-99	0
100	36

Table 6.25 Proportion of total sample living in streets according to proportion of ramps where steps occur

Proportion of ramps where steps occur	Total sample (%)
0	51
1-10	15
41-50	24
61-70	3
100	7

Table 6.26 Proportion of total sample living in streets according to instances of primary seating

Instances of primary seating per street	Total sample (%)
0	80
1	4
2	2
3	5
4	9

Table 6.27 Proportion of total sample living in streets according to instances of secondary seating

Instances of secondary seating per street	Total sample (%)
0	75
1	16
2	4
3	4
5+	1

Table 6.28 Proportion of total sample living in streets according to instances of bus stops with shelters

Proportion of bus stops with shelters	Total sample (%)
0	53
25	10
50	20
75	0
100	17

Table 6.29 Indicators of inclusiveness by neighbourhood

Indicator of inclusiveness	Grandpont	Jericho	BBLeys	N'thorpe	Walkley	Fulwood
Spread of primary seating	0.2295	0.0888	0.1401	0.0451	0.1583	0.1221
Spread of secondary seating	0.1401	0.0573	0.1351	0.066	0.1763	0.103
Number of public toilets	0	0	0	0	1	0

6.4.8 Maintenance

There are three indicators measuring the level of maintenance of the built environment at the street level. Tables 6.30-6.32 show the proportion of the sample who lived in streets according to these indicators. Firstly, Table 6.30 shows that the majority of the sample (69%) lived in streets which were recorded as having no litter or refuse when the site survey was conducted. Table 6.31 shows that, on the whole, the pavement condition of the streets in which the sample lived was relatively good (69%), however for a quarter of the sample, pavements were found to have trips and holes forming. According to Table 6.32, most of the sample lived in streets where the quality of buildings and gardens was at least fairly good. It should be noted that the indicator measuring the amount of litter (and the other indicators to a lesser extent) provides a snapshot of the level of maintenance in a street on the particular day that the site survey was conducted. It was not feasible to repeat the exercise over a time period to assess the condition of the streets more accurately.

Table 6.30 Proportion of total sample living in streets according to amount of litter

Amount of litter	Total sample (%)
Heavily littered with significant accumulations	2
Widespread distribution of litter and refuse with minor accumulations	3
Predominantly free of litter and refuse apart from some small pieces	26
No litter or refuse	69

Table 6.31 Proportion of total sample living in streets according to pavement condition

Condition of pavement	Total sample (%)
Large holes and trips	6
Trips and holes forming/ some small trips	25
Some minimal raising of flagstones, some cracks	56
Good	13

Table 6.32 Proportion of total sample living in streets according to the average rating of quality of buildings/ gardens per street

Rating of quality of buildings/ gardens per street	Total sample (%)
Very bad	2
Fairly bad	7
Neither good nor bad	18
Fairly good	53
Very good	20

6.4.9 Natural surveillance

The indicator measuring the extent of natural surveillance is presented in Table 6.33. This table shows the proportion of the sample who lived in streets according to how overlooked the street is. Over half of the sample lived in streets which have between high levels of natural surveillance (between 76 and 99%). Almost 90% of the sample lived in streets where at least 50% of the buildings overlook the street.

Table 6.33 Proportion of total sample living in streets according to the extent of natural surveillance in the street

Extent of natural surveillance per street (%)	Total sample (%)
0	3
1-25	2
26-50	6
51-75	32
76-99	51
100	6

6.4.10 Character of the neighbourhood

The indicators measuring the character in a neighbourhood related to data collected mainly by the semi-structured interviews, based on a sample of 102 interviewees. The first indicator asked interviewees how they would describe their neighbourhood to an outsider. Because of the breadth of responses to this question, content analysis was used to establish any commonalities emerging from the descriptions. Table 6.34 shows the proportion of responses from residents in each study site who described their neighbourhood by referring to the quality of the built environment, the built environment in other terms, social cohesion in the neighbourhood or other social aspects of the population living there. The totals of the responses for each study site may amount to more than 100% as many interviewees described their neighbourhood using numerous different terms.

Table 6.34 shows that there is a clear tendency of the interviewees sampled to describe their neighbourhoods in terms of its physical characteristics. Most descriptions relate to aspects of the built environment which are not defined as features of quality of the built environment for the purposes of this research. Such features include housing type, location and views. To a lesser, but still considerable extent, on average 51% of interviewees referred to features of quality of the built environment when describing their neighbourhood. A smaller proportion described their neighbourhood in terms of the social characteristics of the people living there (such as the mix of people, profession and the

ethnic characteristics), while fewer still referred to the dimensions of social cohesion as identified for this research.

Table 6.34 'How would you describe your neighbourhood to someone who has never been there before?' (Semi-structured interview question 4)

General terms used to describe the neighbourhood	Total sample (%)[1]
Quality of the built environment	51
Built environment - other	66
Social cohesion	14
Social – other	48

[1] percentages for each category add up to more than 100%

The second indicator asked interviewees if they considered their neighbourhood to have its own character. Table 6.35 shows the results from the semi-structured interviews which indicate that the majority of interviewees did agree that their neighbourhood has its own character. On average 68% of respondents stated that their neighbourhood has its own character, while an average of 27% disagreed.

Table 6.35 'Does your neighbourhood have its own character?' (Semi-structured interview question 5)

Character? (%)	Total sample (%)
Yes	68
No	27
Don't know	5

Table 6.36 provides some indication as to how interviewees described the nature of the character of the neighbourhood in which they live. Content analysis showed that, as in the responses to Question 4, interviewees tended to describe the character of the neighbourhood in terms of the built environment or the characteristics of the population. For consistency, the same categories are used as in Table 6.34 (and as before, the percentages may total more than 100% because they relate to all responses provided by interviewees). The table shows that interviewees were more likely to describe the character of the neighbourhood in terms of the resident population than of the built environment. This is illustrated starkly in some of the responses from residents in the sample who did not refer to the built environment at all in their descriptions of the character of their neighbourhoods. Some of the commonly cited terms used to describe their character include 'friendly', 'mix of people', 'bohemian' and 'strong community'.

Table 6.36 'How would you describe this character?' (Semi-structured interview question 6)

General terms used to describe the neighbourhood	Total sample (%)[1]
Quality of the built environment	21
Built environment - other	26
Social cohesion	33
Social – other	33

[1] percentages for each category add up to more than 100%

The final indicator measuring the character of a neighbourhood is interviewees' opinions of the distinctiveness of their neighbourhood. Interviewees were asked what makes their neighbourhood different from others, and the results are shown in Table 6.37. As before, responses referred to both physical and non-physical features of the neighbourhood and they have been categorized in the same way as above. The responses were more evenly spread in relation to physical and non-physical descriptions: most interviewees referred to social characteristics of the population such as community stability, predominant occupations of residents and the people in general. Fewer interviewees referred to dimensions of social cohesion, but those who did described the distinctiveness of their neighbourhood as 'community spirit', 'friendly' and having a 'good community'. Interviewees also made frequent reference to the built environment when describing what makes their neighbourhood different from others. Some interviewees consistently referred to features of quality of the built environment such as accessibility to public transport and green spaces in and outside the neighbourhood while others referred to accessibility and the services and facilities within the neighbourhood. In Fulwood, the topography of the area was commonly cited as was its proximity to, and views over, open countryside.

Table 6.37 'What is it that makes your neighbourhood different from other neighbourhoods?' (Semi-structured interview question 7)

General terms used to describe the neighbourhood	Total sample (%)[1]
Quality of the built environment	35
Built environment - other	39
Social cohesion	14
Social – other	40

[1] percentages for each category add up to more than 100%

6.4.11 Residents' perceptions of quality of the neighbourhood

The final set of indicators relates to residents' perceptions of the quality of the neighbourhood. The first indicator relates to a question posed in the household questionnaire which asked respondents how they rated their neighbourhood as a place to

live (Table 6.38). On average, most respondents (87%) rated their neighbourhood as at least fairly good. Some preliminary statistical analysis which involved a one-way ANOVA test indicates that while the differences in the means between the respondents in different neighbourhoods are small, they are significant, particularly the differences in means between the residents in Fulwood and the residents in both Netherthorpe and Blackbird Leys.

Table 6.38 Rating of neighbourhood as a place to live (Household Questionnaire 18.1)

Rating of the neighbourhood as a place to live	Total sample (%)
Very bad	1
Fairly bad	2
Neither good nor bad	10
Fairly good	40
Very good	47

The second indicator measuring the perceived quality of the neighbourhood asked interviewees directly how they rated the quality of their neighbourhood on a scale of one to ten. The average scores for the total sample are listed in Table 6.39. 16% of the sample rated their neighbourhood at 6 out of ten or less, with 84% scoring their neighbourhood at least seven out of ten. Almost a third of the sample rated their neighbourhood at 8 out of ten. 7% of the sample scored their neighbourhood at ten out of ten: all of these interviewees lived in Sheffield study sites.

Table 6.39 Rating of the quality of the neighbourhood (scale of 1-10 where 1 is very bad and 10 is very good) (Semi-structured interview question 9)

Rating of the neighbourhood as a place to live	Total sample (%)
1	0
2	4
3	0
4	1
5	4
6	7
7	26
8	31
9	20
10	7

6.5 Social cohesion in the sample

This section presents some descriptive data provided by the indicators of the individual dimensions of social cohesion for the total sample.

6.5.1 Social interaction

There are six indicators which measure social interaction. Table 6.40 shows the proportions of the sample who reported scores on the indicators measuring social interaction. The table indicates that 52% of the sample does not see any of their neighbours socially on average once a week. Almost a quarter of the respondents see a few of their neighbours socially once a week, but this drops dramatically as the number of neighbours increases as 1% of the sample reported seeing all of their neighbours socially once a week. 8% of the sample did not provide an answer for this indicator.

The majority (86%) of the respondents in the sample chats with or greets at least a few of their neighbours. This type of interaction is less intensive than seeing neighbours socially which may why there are larger proportions of the sample engaging in it. 6% of the sample said that they chatted with none of their neighbours, and 4% said reported chatting with all their neighbours.

A large proportion of the sample stated that they would not ask their neighbours to borrow food or tools, and 34% of the sample would ask only a few of their neighbours. 5% of the sample stated that they would ask most of their neighbours and 1% would ask all of their neighbours.

Table 6.40 Proportion of total sample engaging in social interaction

How many of your neighbours would you say that you...	see socially once a week?	chat with/ greet?	borrow food/ tools from?	know by name?	have no contact with?	avoid contact with?
None	52	6	40	9	12	60
A few	22	41	34	37	28	17
Some	12	24	14	22	22	9
Most	5	21	5	22	26	4
All	1	4	1	6	3	1
No response (missing data)	8	4	6	4	9	10

The table shows that the majority of respondents know at least a few of their neighbours by name, and 6% know all of their neighbours' names. The last two variables go some way to collecting data on the more negative aspects of social interaction. The first shows that the majority of the sample (79%) has no contact with at least a few of their neighbours, while most of the sample (60%) do not avoid contact with any of their neighbours.

6.5.2 Social networks

The three indicators used to measure the nature and extent of social networks of questionnaire respondents are listed in Tables 6.41-6.43. The first indicator, measuring whether respondents regularly see friends and family socially in the neighbourhood, shows that most respondents in the sample socialize with friends and family in the neighbourhood, but a large proportion (46%) do not. Supplementary questions were asked about whether respondents socialized with friends and family within the city and outside the city which are also presented in Table 6.39. 64% of the sample indicated that they did socialize with friends and family within the city and 34% indicated that they socialized outside the city.

Table 6.41 Proportion of total sample seeing friends in the neighbourhood

Do you see friends/ family socially on a regular basis…	within your neighbourhood?	within the city (but outside the neighbourhood)?	outside the city?
Yes	54	64	34
No	46	36	66

Table 6.42 shows the frequency with which respondents reported seeing their friends and relatives. The majority of the residents in the sample responded that they saw their friends and family at least once a week. For 14% of the sample, this occurred once a month and for 4% of the sample, this was no more often than once a year. Finally, Table 6.43 shows how many of those friends and family socialized with reside in the respondents' neighbourhood. According to Table 6.41, the majority of respondents' social networks do not reside in the neighbourhood. 32% of the sample stated that none of their friends or relatives lived in their neighbourhood, while 34% said only one or two of them did.

Table 6.42 Frequency of interaction with social networks

How often do you see friends/ relatives?	Total sample (%)
Everyday/ most days	36
At least once a week	45
At least once a month	14
At least once a year	3
Never	1
No response (missing data)	2

Table 6.43 Number of strong social networks residing in the neighbourhood

Of these friends/ relatives, how many of them live in your neighbourhood?	Total sample (%)
None	32
One or two	34
Three or four	14
Five or more	15
No response (missing data)	5

6.5.3 Sense of community

The indicators measuring sense of community apply to the household questionnaire sample and the smaller semi-structured interview sample. Table 6.44 shows the sample responses from the indicators in the household questionnaire. The pattern in responses seems to be similar for these indicators. Most residents reported positively that they agreed, and did not disagree, with the statements designed to measure sense of community. Over 55% of the sample reported feelings of pride in their neighbourhood while 67% felt that their neighbourhood was friendly. 55% reported that their neighbourhood was a place where neighbours looked out for each other and just over half of the sample agreed that people from different backgrounds get on well together.

Table 6.44 Indicators of sense of community for the total sample (%)

Do you agree with the following statements?	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	No response (missing data)
I am proud of my neighbourhood	18	37	32	6	3	4
This is a place where neighbours look out for each other	19	36	28	11	3	3
This is a friendly neighbourhood	26	41	22	6	2	3
People from different backgrounds get on well together in this neighbourhood	14	37	36	6	3	4

Tables 6.45 and 6.46 show the results from the semi-structured interview indicators measuring sense of community. The first table shows that the vast majority of the sample reported that people in their neighbourhood got on at least quite well together (95%). Table 6.45 shows that the interview sample felt that these responses were more evenly spread. Over 70% agreed that there was at least a fairly strong sense of community in their neighbourhood; however, almost 30% of the sample felt that the sense of community was not very strong and 12% stated that there was no sense of community at all.

Table 6.45 Interview sample – indicator of sense of community (1)

How well would you say that people in this neighbourhood get on together?	Interview sample (%)
Not at all well	1
Not very well	4
Quite well	56
Very well	39

Table 6.46 Interview sample – indicator of sense of community (2)

Thinking about your neighbourhood, how strong a sense of community is there where you live?	Interview sample (%)
No sense of community	12
Not very strong	17
Fairly strong	55
Very strong	16

6.5.4 Participation in organized activities

Table 6.47 shows the proportions of household questionnaire respondents who take part in a range of organized activities in the area that they consider to be their neighbourhood. 19% of the sample reported taking part in sports and exercise groups within their neighbourhood. This rises to 31% when such groups are included which are located outside the neighbourhood which is also the case for adult education groups and 'other' groups. This may not be too surprising as such activities are dependent on the facilities present in any neighbourhood. Participation in local community and religious groups takes place most frequently within the neighbourhood. For all the activities, the rate of participation drops when they are located outside the city.

Table 6.47 Proportion of total sample participating in organized activities within and outside the neighbourhood, and outside the city

In your free time, which of the following activities do you undertake at least once a month?	within your neighbourhood?	within the city (but outside the neighbourhood)?	outside the city?
Sports/ exercise groups	19	31	8
Adult education groups	6	13	3
Local community or neighbourhood groups	12	5	1
Support groups	4	6	1
Religious groups	11	10	2
Other groups	6	11	4

6.5.5 Feelings of trust and reciprocity

There are three indicators measuring trust and reciprocity in the neighbourhood. The first two are in response to questions asked of the household questionnaire sample and are presented in Table 6.48. The first indicator is also used to measure sense of community as it is used to capture aspects of the two inter-related concepts. As the overall indicators of sense of community and trust are not included in any direct analysis, this is not statistically problematic; however, caution is taken to ensure that results are not over-emphasized due to any high correlations. The table shows that the majority of the sample agreed that they could rely on someone in their neighbourhood if they needed help, while 10% disagreed. Table 6.47 shows that the most of the interview sample reported feelings of trust towards at least some of their neighbours (82%), with 55% reporting that they trusted most their neighbours. Almost 20% of the sample reported trusting no more than a few of their neighbours.

Table 6.48 Indicators of trust and reciprocity for the total sample (%)

Do you agree with the following statements?	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	No response (missing
This is a place where neighbours look out for each other	19	36	28	11	3	3
I I needed a favour, I could rely on someone in this neighbourhood to help me	37	33	17	6	4	3

Table 6.49 Interview sample – indicator of trust and reciprocity

How many of your neighbours would you say that you trust...	interview sample (%)
None	2
A few	17
Some	23
Most	54
All	4

6.5.6 Feelings of safety

Two indicators were employed to measure the feelings of safety of the household questionnaire sample. The first is shown in Table 6.50 asked respondents how safe they felt walking alone in their neighbourhood after dark. 61% of the sample reported feeling safe while almost a quarter (24%) reported feeling unsafe. 15% of the sample stated that they never went out alone after dark.

Table 6.50 Proportion of the total sample reporting feelings of safety (%)

How safe do you feel walking alone in your neighbourhood after dark?	total sample (%)
Very safe	18
Fairly safe	43
A bit unsafe	20
Very unsafe	4
Never go out alone after dark	15

Table 6.51 Proportion of the total sample reporting crime as a problem (%)

In your neighbourhood, how much of a problem is crime in the area?	total sample (%)
Not a problem	23
A minor problem	53
A serious problem	13
Don't know	11

Table 6.51 shows the proportions of the sample who responded to the question about how much of a problem crime was in the area. 23% of the sample reported that crime was not a problem in their area at the time of the questionnaire, while the majority (53%) reported it as a minor problem. 13% stated that crime was a serious problem in their area, and just over 10% responded that they did not know.

6.5.7 Sense of place attachment

The final set of indicators measuring social cohesion relate to the sense of place attachment that residents feel in relation to their neighbourhood. Three indicators measure this dimension of social cohesion: two of them relate to feelings of pride and belonging and were asked in the household questionnaire sample (Table 6.52). The majority of the sample reported agreement with both feeling proud of their neighbourhood (55%) and feeling that they belonged to the neighbourhood (59%). 12% stated that they did not agree that they belonged to the neighbourhood.

Table 6.52 Proportion of the total sample reporting feelings of pride and belonging (%)

Do you agree with the following statements?	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	No response (missing data)
I am proud of my neighbourhood	18	37	32	6	3	4
I feel that I belong to this neighbourhood	23	36	26	7	5	4

The final indicator of sense of place attachment asked the semi-structured interview sample about their feelings of attachment to their neighbourhood. Table 6.53 shows the

proportions of the interview sample who reported feelings of attachment to their neighbourhood. The vast majority of the interview sample (82%) reported feeling attached while 18% stated that they did not feel attached, 7% of whom did not feel at all attached.

Table 6.53 Proportion of the interview sample reporting feelings of attachment (%)

How attached do you feel to your neighbourhood?	interview sample (%)
Very attached	41
Fairly attached	41
Not very attached	11
Not at all attached	7

6.4 Conclusions

This chapter has outlined some of the characteristics of the sample, the resident population and the study sites under examination. Using data from the 2001 Census, it is possible to show some of the broad socio-economic characteristics of the population of the neighbourhoods. With reference to the household questionnaire and semi-structured interviews, the data collected provides rich datasets about two smaller samples of the population. The tables in Section 6.3 show that the sample of research participants cannot be described confidently as representative of the population. This may be because the neighbourhood boundaries adopted in the research do not correspond to the output area boundaries used in the Census. It is not possible to ascertain exactly why the sample does not represent the local population but where this is the case, it is taken into consideration in the analyses and in the discussion of the findings.

It is useful to set out the general characteristics of the individual neighbourhoods, the samples and the populations in order to become familiar with the nature of the places and the people who live there. However, further and more intensive analysis of the data must be employed for the relationship between the quality of the built environment and social cohesion to be fully examined and understood. To do this, the following chapter provides details of the analyses conducted across the sample, and the findings presented relate both to the whole sample of the population who responded to the household questionnaire, and, where applicable, to the sub-sample who responded to the semi-structured interview. Reference is made to individual neighbourhoods only where it is relevant in the analysis.

Chapter Seven

High Quality Built Environments and Social Cohesion

Chapter Seven – High Quality Built Environments and Social Cohesion

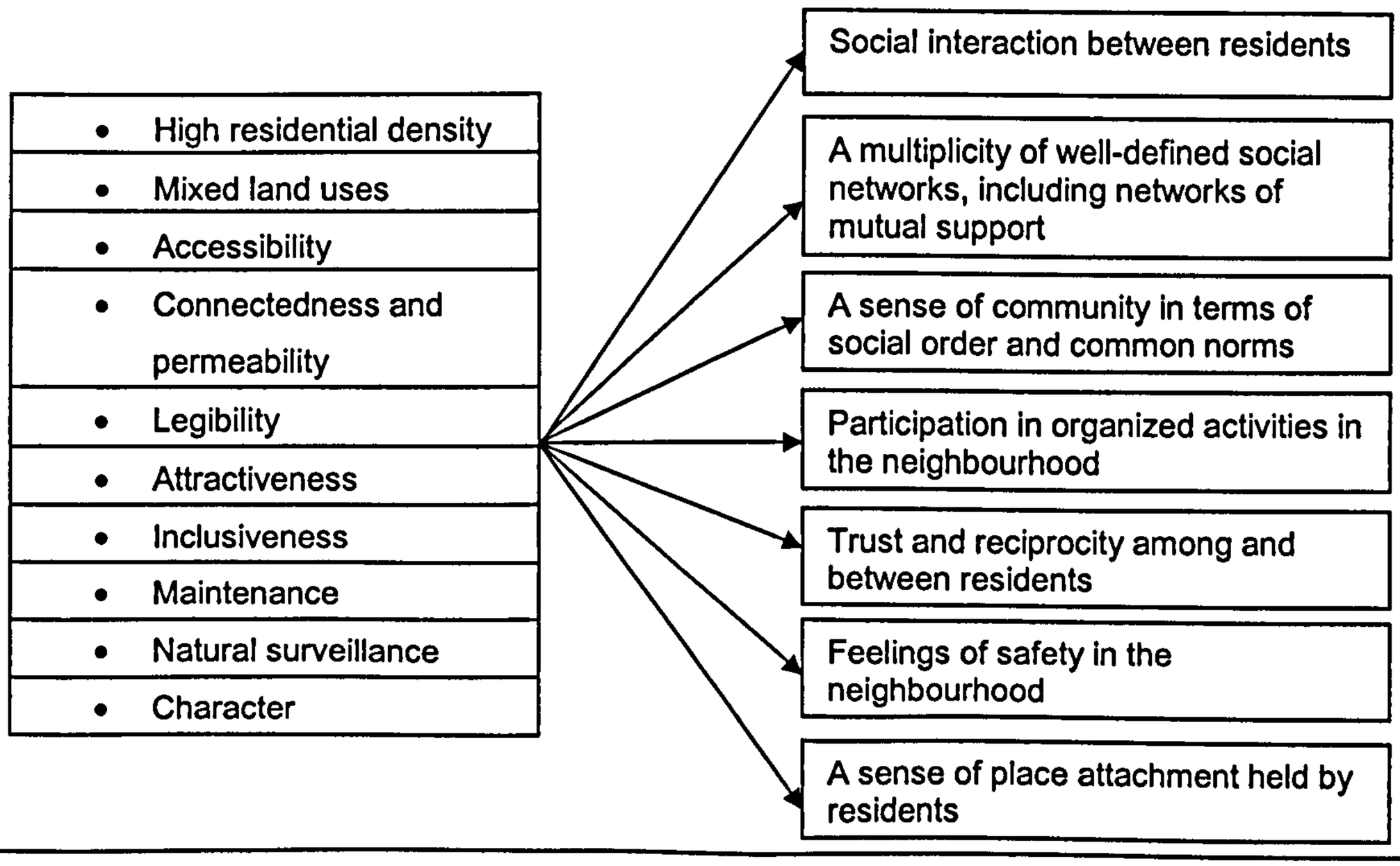
7.1 Introduction

The research objectives to be achieved in the analysis stage of this research are:

- To determine the relationship, if any, between the features that constitute a high quality built environment and social cohesion
- To investigate the nature and extent of the relationship
- To identify the features of high quality in the built environment that are most likely to support social cohesion in English neighbourhoods

The purpose of this chapter is to address the first two research aims. This is done by investigating whether there is evidence of a relationship between the features of high quality in the built environment, identified in Chapter Two, and each dimension of social cohesion, identified in Chapter Three (see Box 7.1). Secondly, if such a relationship exists, the nature of the relationship is determined by establishing if the features of high quality in the built environment affect dimensions of social cohesion positively or negatively. Finally, the significance of the features of a high quality built environment is examined, with the influence of intervening variables taken into account. In this chapter, the research findings are related to each dimension of social cohesion.

Box 7.1 Relationships examined in Chapter Seven



Tables are presented in each section of this chapter which show where evidence is found of a significant association between variables, and show the results from regression analysis relating to each dimension of social cohesion as the dependent (or affected) variable. The tables show the results from two regression models: the first includes quality of the built environment variables only as the independent (or influencing) variables; the second comprises the quality of the built environment variables and intervening (or interfering) variables as the independent variables. Matrices showing the full analysis results are listed in Appendices E to H and are referred to where findings are not presented in this chapter.

As discussed in Chapter Four, statistical analyses using SPSS were employed for this research. SPSS is a statistical analysis program frequently used in social sciences research and the protocols of the statistical tests used were closely followed (Tables 4.8 and 4.9).

7.2 Social interaction between residents

A number of features of quality of the built environment, and intervening variables, are found to have significant associations with social interaction. Table 7.1 shows where evidence of associations between the indicators occurs. Where significant associations do not occur, the independent variable is not included in the table. Intervening variables are listed in italics. Table 7.2 shows the findings from the regression analyses. The findings are discussed in the following sections.

Table 7.1 Evidence of an association between social interaction and other indicators

Indicator	Evidence of an association
High residential density	✓
Accessibility	✓
Maintenance	✓
Natural surveillance	✓
Perceived quality of n'hd	✓
Household income	¿?
Tenure	✓
Plans to move house	✓
Use of services and facilities	✓

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

Table 7.2 Standard Multiple Regression Analysis: Z-score of social interaction variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SI1. QoBE variables only	(Constant)	-5.217		0.000		
	neigh_place	0.045	0.223	0.000	0.834	1.200
	Z_access	0.733	0.211	0.000	0.953	1.049
	frontage	0.018	0.095	0.017	0.965	1.036
	Z_maint	0.197	0.090	0.033	0.849	1.178
SI2. QoBE variables and intervening variables	(Constant)	-3.962		0.000		
	neigh_place	0.032	0.157	0.000	0.805	1.242
	Z_access	0.506	0.145	0.001	0.813	1.230
	frontage	0.014	0.077	0.050	0.953	1.049
	Z_maint	0.197	0.090	0.031	0.838	1.193
	tenure_private renter	-1.679	-0.154	0.001	0.741	1.350
	hhd_income <10K	-1.736	-0.188	0.000	0.927	1.078
	plans_move	-1.340	-0.163	0.000	0.778	1.285
	use_facs	0.031	0.128	0.001	0.965	1.037
	length_res	0.024	0.082	0.049	0.846	1.181

SI1. R = .329 R Square = .108 Adjusted R Square = .102 This indicates that 10.2% of variance in all social interaction is explained by the variables in this model

SI2. R = .471 R Square = .222 Adjusted R Square = .209 This indicates that 20.9% of variance in all social interaction is explained by the variables in this model

7.2.1 Features of quality of the built environment and social interaction

According to theory, high quality built environments support positive social interaction through the opportunities provided by high-density, mixed use residential living (Talen, 1999; Young and Willmott, 1957). The correlation analyses (Appendix E: Table E.1) found that while there is a significant relationship between social interaction and residential density, it is largely negative, weak and not consistently correlated with social interaction. The regression analysis (Appendix F: Table F.3) shows that density is associated only with those variables measuring the more negative aspect of social interaction – namely, the extent to which residents avoid or do not know their neighbours – and makes no contribution to the prediction of social interaction as a whole. This result calls into question the claim in theory that higher residential densities have a positive effect on social interaction (Fischer, 1976; Raman, 2005). Analysis also shows that there is very little association between levels of social interaction in the sample and the extent of mixed use development. This is reflected in the correlation analysis (Appendix E: Table E.2) which found a very weak negative association between the two. Subsequent analyses show that the 'mixed use' variable is not a significant predictor of social interaction, indicating that there are other, more significant influences than the extent of services and facilities in the neighbourhood. Caution is, however, necessary in the interpretation of these results as the scores of the majority of the indicators measuring density and the extent of mixed uses relate to the neighbourhood scale, effectively skewing the results because of the effectively small number of 'cases' (neighbourhoods).

It is argued in theory, policy and practice that a derivative effect of living in attractive and well-maintained neighbourhoods is that residents feel more inclined to interact with one another, in part because they feel safe and psychologically attached to a neighbourhood which feels looked after (Kelling and Coles, 1996; Office of the Deputy Prime Minister [ODPM], 2002). The findings support this claim to varying degrees. A significant association is found between the indicator measuring residents' opinions of the quality of their neighbourhood and social interaction. This consistent association is positive, indicating that those respondents who state that their neighbourhood is a good place to live are more likely to report interaction with their neighbours. This is also supported by the correlation analyses (Appendix E: Table E.9) which produced a low and consistent correlation between the variables. Having said this, the indicator measuring perceived quality is not the strongest predictor of social interaction.

A very weak correlation is found between the attractiveness of the built environment and social interaction (Appendix E: Table E.6). This statistical finding is supported by the interview results which show a mixed response to the claimed relationship: 55% of interviewees agree that an attractive neighbourhood would have a positive effect on social interaction, while 34% state that it would have no effect (Appendix G: Table G.24). Subsequent statistical analyses found no association between the attractiveness of the built environment and social interaction.

The level of maintenance of the built environment on the other hand is found to be positively associated with social interaction across most of the statistical analyses. Correlation analysis shows that this association is significant and weak (Appendix E: Table E.8), which is also confirmed by regression analysis (Table 7.2). This analysis indicates that maintenance of the built environment consistently contributes to the prediction of positive social interaction, but is not the most important predictive variable. This is also illustrated in the interviews where the influence of factors such as litter and graffiti is unclear. Almost a third of interviewees state that litter and graffiti could have a positive effect on social interaction, giving people something to talk about (Appendix G: Table G.18). Almost 40% of interviewees feel that these would have no effect on social interaction, while over 20% said that it would have a negative effect, because 'people don't want to be stood in a littered street' (interviewee OB1031).

This lack of clarity on the contribution maintenance of the built environment makes to social interaction could arguably be due to the fact that other variables, such as the extent of natural surveillance, have an associated and important influence on social interaction in neighbourhoods. The indicator which measures the extent of active frontage on streets is found to be significantly associated with social interaction in the majority of the regression analyses, indicating that in streets where there is more active frontage, residents are more

likely to engage in social interaction. This finding, in part, supports the theory and practice which advocates the benefits of natural surveillance in streets as increasing perceived comfort and safety when people interact with one another (after Alexander *et al.*, 1977; Jacobs, 1961). However, the findings show that neither active frontage nor social interaction is positively associated with an increase in perceived safety.

The regression analyses show that the level of accessibility to public transport in the neighbourhood is consistently associated with positive social interaction, whereas access to open spaces is not a significant predictor of social interaction in these analyses (Table 7.2). The findings show that, overall, the more accessible the neighbourhood is in terms of residents reaching public transport easily, the more likely respondents are to engage in positive social interaction with neighbours. This is supported by the interview findings which show that 63% of interviewees state that having a bus stop nearby would have a positive effect on the opportunity people have for social interaction (Appendix G: Table G.25). The correlation analyses also show a largely positive, albeit very weak, association between the variables measuring social interaction and access to public transport (Appendix E: Table E.3). It is perhaps surprising that the indicator measuring connectedness and permeability of the neighbourhood is not also positively associated with social interaction, as this is more directly linked in the theory to increased opportunities for interaction than accessibility tends to be (after Jacobs, 1961). The findings of the correlation analysis do not indicate that connectedness and permeability have any consistent and significant positive association with social interaction (Appendix E: Table E.4). While over 75% of those interviewed state that a neighbourhood which is easy to walk around would have a positive effect on social interaction (Appendix G: Table G.23), interviewees may have related 'easy' in this context to, for example, how the state of pavements may affect their level of mobility, or how 'walkable' the neighbourhood may be in terms of having services and facilities within a short walking distance (English Partnerships and Urban Villages Forum, 1998).

7.2.2 Intervening variables and social interaction

Of the intervening variables included in the analysis, four are consistently significant in the regression analysis (Table 7.2: independent variables in italics). Household income is found to be a significant predictor of social interaction, indicating that respondents from households with a collective income of less than £10,000 p.a. are less likely to engage in social interaction than other respondents. Further examination of this finding shows that while income is found to be a significant predictor of social interaction, the difference in social interaction between residents from households with different incomes is not found

to be significant (Appendix H: Tables H.1a-b). It should also be noted that 25% of the sample did not provide information about their household income and therefore any findings related to income must be treated with caution.

A related finding shows that a significant association also exists between social interaction and tenure, indicating that residents who privately rent their property are less likely to engage in social interaction than residents with other tenure types. Household income is found to be associated with tenure in that the highest earners tend to own their property and the lowest earners rent from the council, housing association or equivalent. A one-way ANOVA test (Appendix H: Tables H.2a-d) shows that the actual difference in mean scores of social interaction between residents from households of different tenure is found to be relatively large: the effect size was .08 (after Cohen, 1988). This indicates that the mean scores of social interaction for homeowners, private renters and public renters are significantly different from each other.

A further intervening indicator which is a consistent predictor of social interaction is residents' plans to move house. Respondents who indicate that they are planning to move house in the next few years are significantly less likely to report engagement in social interaction with neighbours than those who are not planning to move. This was found to be a strong predictor of social interaction and a significant difference was found in the levels of social interaction between those residents planning to move house and those who are not (Appendix H: Tables H.3a-c). This supports the theory that community stability, in terms of the slow turnover of residents moving into and out of an area, contributes positively to social activity in a neighbourhood (Forrest and Kearns, 1999; Willmott, 1986). Interestingly, however, the closely related intervening indicator measuring length of residence is not found to be significantly associated with social interaction, indicating that people who have lived in a neighbourhood for a long time do not necessarily engage in more social interaction than more recent migrants to the neighbourhood. It should be noted that it may be the case that residents are planning to move in the next few years <u>because</u> they have not bonded with their neighbours. However such data was not collected and so such commentary is speculative.

The fourth significant intervening variable which predicts social interaction measures whether people use the services and facilities in the neighbourhood. A positive association is found between these variables, indicating that people who use these services and facilities in a neighbourhood are more likely to engage in positive social interaction. The findings suggest that the provision of services and facilities in a neighbourhood alone is insufficient to encourage people to interact, as the indicator measuring the extent of mixed uses was not strongly or significantly associated with social interaction, and that it is the actual use of such services which is associated more with

interaction. This might also suggest that residents engage in social interaction with other residents when they use these facilities within the neighbourhood, as has been suggested by theorists (Keller, 1968; Smith, 1975) but called into question by empirical research (Jupp, 1999). However, these findings cannot conclusively support this hypothesis because anomalies have been found relating to the reported level of use of services in the neighbourhood which are not actually provided: for example, 47% of respondents in Walkley indicated that they did (or didn't) use the post office in their neighbourhood even though it had been closed down six months prior to the survey distribution.

7.2.3 Summary: social interaction

The features of quality of the built environment by themselves explain less than 10% of the variance in social interaction, rising to over 20% when the intervening variables are included in the analysis. The main findings are summarized as follows:

- Five indicators of quality of the built environment are significantly associated with social interaction: **density, accessibility, maintenance** and **extent of natural surveillance,** and **residents' opinions of their neighbourhood as a place to live.**
- The findings show that high **residential density** does not lead to a clear and exponential increase in social interaction
- The findings support claims that accessible places provide an infrastructure for social interaction but do not corroborate the theory that connected places support social interaction
- Other intervening variables also contribute significantly to the prediction of social interaction: tenure, household income, residents' plans to move house, use of services and facilities

7.3 Social networks

The findings show that features of quality of the built environment make a very limited contribution to understanding the extent of social networks that residents have in neighbourhoods: this dimension of social cohesion is better explained by intervening variables, as Tables 7.3 and 7.4 indicate.

Table 7.3 Evidence of an association between social networks and other indicators

Indicator	Evidence of an association
Perceived quality of n'hd	✓
Number in household	✓
Plans to move house	?

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

Table 7.4 Standard Multiple Regression Analysis: Z-score of social network variables Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SN1. QoBE variables only	(Constant)	-1.575		0.000		
	neigh_place	0.019	0.164	0.000	1.000	1.000
SN2. QoBE variables and intervening variables	(Constant)	-2.536		0.000		
	neigh_place	0.022	0.162	0.001	0.966	1.036
	hhd_size	0.418	0.206	0.000	0.996	1.004
	plans_move	-0.469	-0.101	0.030	0.969	1.032

SN1. R = .164 R Square = .027 Adjusted R Square = .025 This indicates that 2.5% of variance in social networks is explained by the variables in model SN1
SN2. R = .300 R Square = .090 Adjusted R Square = .083 This indicates that 8.3% of variance in social networks is explained by the variables in model SN2

7.3.1 Features of quality of the built environment and social networks

Little evidence was found to suggest that the quality of the built environment in the neighbourhood has any association with existing social networks. Henning and Lieberg have argued that the neighbourhood is an arena where weak ties can develop, but stronger social ties are not bound by spatial area (1996, p. 23). This is supported by the findings which produce very few significant associations between strong social networks of family and friends and features of quality of the built environment (Table 7.4). Correlation analyses show that there are weak associations between the indicators measuring density, accessibility, attractiveness, maintenance, inclusiveness, safety, and sense of place with social networks, but they are, in some cases, inconclusive as to the direction of the relationship (Appendix E). The regression analyses in Table 7.4 show that only one feature of quality of the built environment is associated with social networks. Residents' opinions of their neighbourhood as a place to live is weakly, but significantly, associated with social networks in analyses both with and without intervening variables included. These findings suggest that the higher residents rate their neighbourhood as a place to live, the more likely respondents are to indicate that they have strong social networks. These significant findings are surprising as there is no empirical evidence to suggest that there is a relationship between residents' general feelings about the quality of their neighbourhood and the social networks that residents have. However, it may be the case that residents take the social environment into account, as much as (or more than)

the physical environment, when considering the quality of their neighbourhood (after Lawton, 1970, in Rapoport, 1977; Jenks and Dempsey, forthcoming, 2007). A subsequent t-test shows that there is a significant difference in reported social networks between those residents who agree that their neighbourhood is a good place to live and those who do not (Appendix H: Tables H.4a-c). The magnitude of the difference in the means of the scores of social networks is however very small (eta squared = 0.011 [after Cohen, 1988]).

7.3.2 Intervening variables and social networks

Two intervening variables were found to have a significant association with social networks (Table 7.2: model SN2: variables in italics). Firstly, the number of people in the respondent's household is found to have a positive association with social networks, suggesting that the higher the number of people per household, the greater the extent of social networks. A one-way ANOVA test shows that the extent of social networks differs significantly for respondents from households of different sizes (Appendix H: Tables H.5a-d). However, the effect of size on the difference between respondents' social networks is quite small (eta squared = 0.02 [after Cohen, 1988]). Further analysis was conducted to ascertain if this association was influenced in any way by the composition of the households, as social networks can form through children in households (Fischer, 1976; Ellen and Turner, 1997). A two-way ANOVA test shows that there is little significant difference in social networks in households with children to households without (Appendix H: Tables H.5.1a-b).

Secondly, respondents' plans to move house in the near future is also found to be significantly associated with social networks. Initial analysis shows that if respondents are planning to move house, they are more likely to score lower for social networks. This is supported by a subsequent t-test (in Appendix H: Tables H.6a-c) which shows that there is a significant difference in the social networks between those planning to move and those not, but the size of this difference is very small (eta squared = 0.009). Such an association may however be due to the influence that social networks have on people's decision to move house: it may be the case that residents are planning to move house because their strong social networks are not present in that particular neighbourhood (after Dawkins, 2006).

7.3.3 Summary: social networks

Unsurprisingly, a very small proportion of the variation of the extent of social networks is found to be predicted by features of quality of the built environment. This proportion almost quadruples when intervening variables are inserted into the analysis. However, overall, only 8% of the variation in social networks is explained when all the variables are included, indicating that there are other indicators not included in the research which may predict social networks more successfully.

- Of the indicators measuring quality of the built environment, only one has a significant association with social networks: **residents' opinions on their neighbourhood as a place to live.**
- Two intervening indicators are found to be significantly associated with social networks: household size and plans to move house.
- These and other analyses examining the extent of social networks (and social interaction) must be approached with caution as it does not necessarily follow that a resident with a small number of social networks is less sociable than other residents. While personal circumstances of the respondents can explain some of the variation of residents' social networks, the propensity not to engage in social networks or social interaction is something that should be taken into account; however it was outside the scope of this research (after Fischer, 1982).

7.4 Sense of community

There are strong claims in theory, policy and practice that the quality of the built environment has an important influence on residents' sense of community in a neighbourhood (CABE, 2005; DETR, 2000a; 2000b; Institute of Highway Incorporated Engineers, 2002; Nash and Christie, 2003). Overall, the findings support these claims with regard to a number of the features of quality of the built environment which are shown in Table 7.5. The findings from the regression analyses are shown in Table 7.6.

Table 7.5 Evidence of an association between sense of community and other indicators

Indicator	Evidence of an association
Attractiveness	✓
Maintenance	✓
Natural surveillance	✓
Character of n'hd	✓
Perceived quality of n'hd	✓
Plans to move house	✓
Length of residence	✓
Gender	?
Use of services and facilities	✓

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

7.4.1 Features of quality of the built environment and sense of community

Five features of quality are significantly and positively associated with a sense of community across the analyses. Firstly, the extent of natural surveillance in the street is found to be positively associated with residents' sense of community. This finding indicates that in streets where there are more opportunities for natural surveillance, respondents are more likely to report a stronger sense of community. To ascertain if the significance of natural surveillance on sense of community is influenced by the housing type, further analysis was conducted taking into account this latter variable. There is a significant difference in the sense of community for respondents who live in different housing types on streets with differing amounts of building frontage (Appendix H: Tables 7.1a-b). The effect size for this variable is 0.033, indicating that the actual difference in mean scores is quite small (after Cohen, 1988).

A good level of maintenance in the neighbourhood is also positively associated with the perceived sense of community, according to the statistical findings of correlation and regression analyses (Appendix E: Table E.8; Table 7.6). This supports the claims and empirical research which states that the better maintained a place is, the stronger the sense of community (Baxter and Associates, 1998; Gillespies, 1997; Kelling and Coles, 1996; ODPM, 2002).

Table 7.6 Standard Multiple Regression Analysis: Z-score of sense of community variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SOC1. QoBE variables only	(Constant)	-8.609		0.000		
	neigh_place	0.068	0.404	0.000	0.514	1.946
	Z_maint	0.205	0.113	0.002	0.792	1.262
	frontage	0.015	0.098	0.003	0.970	1.030
	appear	0.015	0.113	0.010	0.551	1.814
SOC2. QoBE variables and intervening variables	(Constant)	-8.244		0.000		
	neigh_place	0.053	0.319	0.000	0.543	1.842
	appear	0.020	0.157	0.001	0.572	1.750
	Z_maint	0.125	0.073	0.062	0.778	1.285
	use_facs	0.032	0.161	0.000	0.976	1.025
	plans_move	-0.769	-0.129	0.001	0.861	1.161
	length_res	0.022	0.095	0.010	0.868	1.152
	gender	0.519	0.087	0.013	0.952	1.051

SOC1. R = .598 R Square = .358 Adjusted R Square = .352 This indicates that 35.2% of variance in sense of community is explained by the variables in this model
SOC2. R = .615 R Square = .379 Adjusted R Square = .369 This indicates that 36.9% of variance in sense of community is explained by the variables in this model

Furthermore, of those respondents interviewed here, 83% stated that a built environment in good condition would have a positive effect on the sense of community, and almost three quarters agreed that litter and graffiti would have a negative effect on the sense of community in a neighbourhood (Appendix G: Tables G.30). However, 12% of the sample indicate that litter and graffiti would have a positive effect on the sense of community in a neighbourhood as it would 'rally the community' because 'people would want to do something about it' (OC470 and OC640), implying that the permanent removal of litter and graffiti is desirable (Appendix G: Table G.31).

A further feature of quality associated with sense of community is the attractiveness of the neighbourhood. A number of the individual indicators, making up the composite variable of attractiveness are positively correlated with sense of community (Appendix E: Table E.6). Over 80% of the interview sample stated that an attractive neighbourhood would have a positive effect on the sense of community, while 14% stated that it would have no effect (Appendix G: Table G.32). One respondent stated that attractiveness is not at all necessary for a sense of community in a neighbourhood, although unattractiveness may have a negative effect (paraphrasing OC470), implying that the benign effect of an attractive neighbourhood is stronger than the potentially negative effect of an unattractive one. In the regression analysis, only one of the indicators measuring attractiveness is found to be a significant predictor of sense of community. Residents' opinions of the appearance of the neighbourhood is found to be positively associated with sense of community, indicating that the higher residents rate the appearance of their neighbourhood, the more likely they are to report a stronger sense of community. A one-way ANOVA test revealed that there were significant differences between the reported

sense of community varying according to how residents rate their neighbourhood's appearance (Appendix H: Tables H.7a-d): these differences are large, according to the calculation of the eta squared value (0.20; after Cohen, 1988). The positive association found between the attractiveness of the neighbourhood and the sense of community provides empirical evidence to support the claims made in policy (English Partnerships, 1998; Scottish Executive, 2000).

The indicator measuring residents' opinions of their neighbourhood as a place to live is found to be significantly associated with their sense of community, indicating that the more highly residents rate the quality of their neighbourhood, the stronger the sense of community. Significant differences are found between residents' sense of community depending on how residents rate their neighbourhood as a place to live. According to a one-way ANOVA test (Appendix H: Tables H.8a-d), these differences were found to be very large (eta squared = 0.33). These findings are supported by the correlation analysis (Appendix E: Table E.9), which found a generally modest association between the indicator measuring residents' score (out of ten) given by interviewees to the quality of their neighbourhood, suggesting that as the score increases, so does the extent of the perceived sense of community.

The remainder of the features of quality of the built environment do not have a consistent association with the sense of community, and where relationships are found, primarily in the correlation analysis, they are invariably weak (Appendix E). One exception to this is the association between indicators measuring the character of a neighbourhood and sense of community. Correlation analysis shows stronger positive and significant correlations with sense of community than with other remaining features of quality (Appendix E: Table E.9). Those interviewees who feel that their neighbourhood has a character are more likely to agree with statements about their neighbourhood having a sense of community. This is supported by analysis of the interview results which shows that 78% of the sample agrees that the character of the neighbourhood would have a positive effect on its sense of community (Appendix G: Table G.36). 5% of this sample stated that the character could have both a negative and positive effect on the sense of community, depending on the nature of the character, and a further 15% stated that it would have no effect. While these findings imply that the more positive the character of the neighbourhood the stronger the sense of community, the differences in opinion reflected by the latter indicator are worth noting. Neighbourhoods in the UK are often decried in policy, the media and theory for their 'placelessness' and lack of distinctiveness (British Broadcasting Corporation [BBC], 2006; ODPM, 2002; Relph, 1976) which arguably contribute to a lack of place attachment and sense of community. This 'placelessness' may be a reason for the lack of consensus in the findings on the influence

that the character of a neighbourhood may have on its sense of community; however, addressing this point is outside the scope of this research.

7.4.2 Intervening variables and sense of community

Together, the features of quality of the built environment account for over 35% of the variance in the reported sense of community among the sample. When the intervening variables are added, this rises slightly to 37% (adjusted r^2= .369) and a number of the intervening variables are found to be significant in the regression analysis. Firstly, residents who indicated that they were planning to move house in the next few years were less likely to report a sense of community in the neighbourhood than those who were not planning to move. Likelihood of moving house is a fairly strong predictor of sense of community, in the regression model SOC2, and to compare the scores for sense of community for those planning to move house and those not, an independent samples t-test was conducted (Appendix H: Tables H.9a-c). There was a significant difference in scores for those planning to move and those not planning to move, and the magnitude of the difference in the means was relatively small (after Cohen, 1988; Pallant, 2001). Expressed as a percentage, only 4% of the variance in sense of community is explained by residents' plans to move away or not. It cannot be ruled out however that residents planning to move house are doing so because they feel there is no sense of community in the neighbourhood.

Secondly, the indicator measuring length of residence was found to be significantly associated with sense of community, suggesting that the longer residents live in a neighbourhood, the more likely they are to report a strong sense of community. A one-way ANOVA test shows that there is a significant difference between the sense of community felt by residents who have lived in their neighbourhood for 2-5 years and those who have lived there for over 20 years. The size of this effect is small (eta squared = 0.03 [Cohen, 1988].

A further intervening indicator, residents' level of use of services in the neighbourhood, was found to have a significant association with residents' sense of community. A positive association was found between the indicators, suggesting that residents who use services in the neighbourhood are more likely to report a sense of community. This might suggest that the provision of services and facilities in the neighbourhood can contribute to residents' reporting of a sense of community. This is supported by a significant (p=0.01), albeit weak and inconsistent correlation between the two variables (Appendix E: Table E.2).

Finally, the gender of the respondent was also found to contribute significantly to residents' sense of community. According to the findings, women are more likely to report

a strong sense of community than men. Gender is the weakest predictor of sense of community in the regression model and further examination via an independent samples t-test shows that while, overall, it may have contributed to predicting variance in sense of community, there is very small significance between scores for males and females. Furthermore, it should be noted that the high proportion of female research participants in the sample perhaps contributes to an over-emphasis of the association between these variables.

7.4.3 Summary: sense of community

In summary, it is not wholly surprising that the sense of community is positively associated with features of quality of the built environment, because of the claims commonly made in theory that the physical fabric of the neighbourhood has a strong influence on its sense of community. The indicators measuring quality of the built environment account for 35% of the variance in residents' sense of community; this rises to 37% when the intervening variables are included.

- Those indicators measuring quality of the built environment which contribute significantly to the prediction of sense of community – **maintenance, extent of natural surveillance, perceived attractiveness, character of the neighbourhood** and **overall assessment of the neighbourhood as a place to live** – are arguably dependent on the perceptions of place that residents who live there have, and contribute more to feelings of sense of community.
- Residents who are planning to move house in the near future were less likely to report a strong sense of community than those not planning to move house, although the difference was relatively small.
- Residents who use the services and facilities in their neighbourhood were more likely to report a strong sense of community than those who do not.
- There was a small but significant difference between the sense of community felt by residents who have lived in their neighbourhoods for over 20 years and those who have lived there between two and five years.

7.5 Participation in organized activities

Logistic regression analyses were conducted to ascertain which variables were significantly associated with participation in organized activities. The presentation of these results is therefore different to those reported in the other sections of this chapter which refer mainly to standard multiple regression analyses. Because of the number of tables involved in the logistic regression analyses conducted, the findings for participation in

sports groups in the neighbourhood only are presented in this chapter (Tables 7.8 and 7.9). An exhaustive list of the logistic regression analyses is provided in Appendix F. The features of quality of the built environment are not found to contribute significantly to the prediction of the differences in participation in organized activities in neighbourhoods. The analyses show that a small number of intervening variables are more significant contributors to such differences (Table 7.7).

Table 7.7 Evidence of an association between participation in organized activities and other indicators

Indicator	Evidence of an association
Mixed land uses	¿?
Inclusiveness	¿?
Use of services and facilities	✓
Tenure	✓
Gender	¿?

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

Table 7.8 Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in sports groups in the neighbourhood (Dependent Variable)

Independent variable groups included in each regression model	-2 Log Likelihood	Nagelkerke R Square	Hosmer and Lemeshow Test			Improvement in prediction when regression is applied
			Chi square	df	Sig.	
SPO1	633.778[a]	0.026	9.303	2	0.317	0%
SPO2	577.553[b]	0.127	10.026	8	0.263	0%

[a]Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.
[b]Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

7.5.1 Features of quality of the built environment and participation in organized activities

It would seem to be a logical argument, and one followed in policy, that the provision of services and facilities in a neighbourhood leads to an increase in the level of participation in organized activities (after Pierson, 2002; ODPM, 2005a). The findings provide conflicting empirical evidence regarding this. The logistic regression analyses show a negative association between participation in community groups, religious and the 'other' category of groups, and the extent of mixed use in neighbourhoods (Appendix F: Tables F.8, F.10-F.11).

Table 7.9 Forward Stepwise Logistic Regression Analysis: Participation in sports groups in the neighbourhood (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
SPO1. QoBE variables only	Z_inclu	0.085	0.011	1.089	1.020	1.163
	safe_dummy	0.521	0.023	1.683	1.074	2.638
	Constant	-1.842	0.000	0.159		
SPO2. QoBE variables and intervening variables	Z_inclu	0.079	0.025	1.082	1.010	1.159
	tenure_own	0.773	0.001	2.167	1.376	3.412
	use_facs	0.028	0.000	1.028	1.015	1.042
	length_res	-0.042	0.000	0.959	0.939	0.979
	gender	0.592	0.010	1.807	1.155	2.829
	Constant	-3.349	0.000	0.035		

No significant association is found in relation to participation in other groups (sports groups, adult education and support groups) (Appendix F: Tables F.6-F.7 and F.9). Furthermore, where significant correlations exist between the extent of mixed uses in neighbourhoods and participation in organized activities, it is on the whole negative (Appendix E: Table E.2). This indicates, surprisingly, that as the number of services and facilities in these six neighbourhoods rises, the level of participation in organized activities drops.

The interview questions asked residents about participation in general, without specifying particular activities; answers therefore provide some results at a broad scale about the influence of services and facilities (Appendix G: Table G. 37). Over 78% of the sample indicated that the good provision of services and facilities in their neighbourhood would encourage interviewees to take part in organized activities. This contradicts the statistical findings which suggest that as the extent of services and facilities increases, the level of reported participation in activities decreases. The findings suggest then that, on the whole, the extent of mixed use development was a weak, inconclusive but significant, predictor of participation in organized activities in neighbourhoods.

These findings should however be treated with caution. It should be noted that the nature of the variables required individual logistic regression analyses to be conducted for each group or organized activity, and that the statistical findings do not relate to levels of participation overall. As well as the levels of participation in individual activities obtained from the household survey, the broader interview question posed a hypothetical question ('would you say that good provision of local services and facilities might encourage or discourage you from participating in activities?'): this question does not ask interviewees about *actual* levels of participation. In essence, the survey and the interview are asking different questions about the same, broad topic. Furthermore, the mixed use indicators measure those 'key' services and facilities which theorists and practitioners consider as essential in the neighbourhood which do not necessarily correspond to those activities

asked about in the survey. These indicators go some way to determining the relationship between the provision of services and facilities and participation in organized activities, but to fully answer the question has been shown to be outside the scope of this research.

The logistic regression analyses show that the inclusiveness of the neighbourhood contributes significantly to the prediction of levels of participation in sports groups. This indicates that residents are more likely to participate in sports groups in more accessible neighbourhoods. The inclusiveness of the neighbourhood is shown to be very weakly associated with participation in sports groups as, alone, it explains only 2.6% of its variance, and with intervening variables added, only 13%.

7.5.2 Intervening variables and participation in organized activities

A number of intervening indicators are significantly associated with participation in more than one type of organized activity. The most consistent of these is the level of use of services and facilities in the neighbourhood. The findings from the logistic regression indicate that there is a positive relationship between the two, suggesting that respondents who use services and facilities in the neighbourhood are more likely to report participation in all organized activities, except in religious groups (Appendix F: Tables F. 6-F.11). This relationship is arguably a clear one, especially in light of the types of services and facilities that respondents are asked about using in the survey. As well as key facilities, respondents are asked about others such as library, community centre and public sports facilities, commonly used as venues for such participatory activities in a neighbourhood. Supplementary analyses were conducted to examine if the indicators measuring participation in organized activities outside the neighbourhood have any influence on participation in organized activities *within* the neighbourhood (Appendix E: Tables E.10 and E.11). Very little correlation was found between levels of participation within and outside the neighbourhood (but within the city), and between levels of participation within the neighbourhood and outside the city. While these indicators marginally improved the overall predictive power of the independent variables in the regression analysis, the variables measuring participation in organized activities outside the neighbourhood are not found to be significant predictors of participation in organized activities within the neighbourhood.

A further significant predictor of participation is the gender of the respondent. The findings indicate that more women than men report participating in particular organized activities which should be interpreted with care in the light of the high proportion of female research participants in the sample. Subsequent chi square tests support this finding, indicating that the level of participation in sports and 'other' groups is significantly higher for women than for men: 21% of women participated in sports groups in the neighbourhood against 15% of men (Appendix H: Tables H.12.1a-b): this, while difficult to

compare directly because of the nature of the indicators (see Gordon *et al.*, 2000), is not supported in other research which finds that men participate in leisure and outdoor activities more than women (Bennett, 1998). Gender is not found here, however, to be a significant predictor of participation in the other activities (community, religious and support groups, and adult education). Neither does gender have a significant association with participation in sports and 'other' activities outside the neighbourhood: it is only found to be significant within the neighbourhood. Further analysis, using chi square tests (Appendix H: Tables H.12.2a-b), shows that a reason for this positive association within the neighbourhood could be because a significant proportion of women in the sample who participate in sport do not have access to a car (p=.001). Running the same test for the male group does not produce significant results, indicating a possible explanation for this variable's predictive power of participation in sports groups; however, this is not replicated for participation in 'other' groups, indicating that other variables are more influential.

Tenure was found to have a significant association with the indicators measuring participation in sports groups and adult education. According to a chi-square analysis (Tables H.12.3a-b), there is a significant difference between levels of participation in sports groups by people who own their property, rent it from the council or housing associations, or rent it privately. However, Appendix H: Tables H.12.4a-b show that there is very little significant difference between levels of participation in adult education according to the tenure of residents' properties.

The interview data indicates other influences that may have an impact on the level of participation in specific activities. 6% of interviewees volunteered their opinions that the actual provision of a range of relevant services and facilities was an important influence on participation in organized activities. It is not possible in this research to measure the presence of such activities in the neighbourhood or to fully examine the extent of use of specific facilities and participation in specific activities. However, the significant contribution that the level of use of a range of services in the neighbourhood is found to make to predicting participation in organized activities suggests that such associations would be positive. Similarly, it is outside the scope of this research to examine the location of the activities, the activities themselves on offer in the neighbourhood or the quality of the activities, all of which were cited by a large proportion of interviewees who volunteered their opinions as having an effect on the level of participation in organized activities in the neighbourhood.

7.5.3 Summary: participation in organized activities

In summary, two features of quality of the built environment have a weak, but significant, association with levels of participation in organized activities.

- **The extent of mixed uses** in the neighbourhood has a negative association with participation in organized activities, which is unexpected as common sense suggests that the provision of services and facilities in the neighbourhood leads to increased participation in organized activities.
- The **inclusiveness** of the neighbourhood was found to have a weak and significant association with participation in sports groups only.
- Non-physical, intervening indicators also have an influence on participation: specifically tenure, the gender of the respondent and their level of use of services and facilities in the neighbourhood.
- However these findings must be treated with caution, because the nature of the indicators required them to be examined separately.
- Furthermore, inadequacies in the indicators used to measure participation are highlighted; these create difficulties in reconciling levels of use of one set of services and facilities to the extent of participation in a different set of organized activities.
- Further research is therefore necessary to provide a full and clear picture of the influences on participation in organized activities in neighbourhoods.

7.6 Trust and reciprocity

The data provides some interesting findings in relation to trust and reciprocity which must be treated with caution due to the weakness of the statistical associations found. Table 7.10 shows where evidence of associations between the indicators measuring quality of the built environment, intervening variables, and trust and reciprocity are found. The results from the standard multiple regression analyses are presented in Table 7.11.

Table 7.10 Evidence of an association between trust and reciprocity and other indicators

Indicator	Evidence of an association
Density	?
Legibility	¿?
Inclusiveness	?
Maintenance	✓
Natural surveillance	?
Perceived quality	✓
Plans to move house	✓
Tenure	✓
Household composition	?
Use of services and facilities	?

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

Table 7.11 Standard Multiple Regression Analysis: Z-score of trust and reciprocity variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
TRU1. QoBE variables only	(Constant)	-3.257		0.000		
	neigh_place	0.029	0.306	0.000	0.827	1.210
	Z_legib	-0.103	-0.099	0.011	0.896	1.116
	frontage	0.011	0.128	0.001	0.953	1.050
	Z_maint	0.088	0.087	0.030	0.841	1.189
	Z_dens	-0.038	-0.081	0.044	0.837	1.195
TRU2. QoBE variables and intervening variables	(Constant)	-2.339		0.000		
	neigh_place	0.024	0.239	0.000	0.786	1.272
	Z_legib	-0.152	-0.153	0.000	0.844	1.185
	Z_maint	0.109	0.109	0.014	0.947	1.056
	Z_inclu	0.054	0.090	0.034	0.812	1.231
	plans_move	-0.698	-0.203	0.000	0.844	1.185
	hhd_comp_single	-0.387	-0.101	0.016	0.938	1.066
	use_facs	0.015	0.129	0.003	0.861	1.161
	tenure_own	0.411	0.117	0.011	0.948	1.055

TRU1. R = .427 R Square = .182 Adjusted R Square = .175 This indicates that 17.5% of variance in trust and reciprocity is explained by the variables in this model

TRU2. R = .517 R Square = .267 Adjusted R Square = .254 This indicates that 25.4% of variance in trust and reciprocity is explained by the variables in this model

7.6.1 Features of quality of the built environment and trust and reciprocity

There is little existing evidence of a causal link between the built environment and trust and reciprocity. Sundquist makes reference to the negative influence that increasing residential densities can have on levels of trust between residents but this is not supported by empirical evidence (1975, in Fischer, 1976). A very weak and negative association is found in the research overall between density and trust and reciprocity, which indicates that as density increases, feelings of trust and reciprocity decrease. The regression analysis shows that density was the poorest predictor of trust and reciprocity in the model including quality of the built environment only (Table 7.11: model TRU1) and it is 'kicked out' of the model when intervening variables are included. Further statistical analysis (Appendix E: Table E.1) shows that density has a very low and negative correlation with trust and reciprocity; however a positive association is found between the indicator measuring the average number of residents per household and trust and reciprocity. Further to Section 7.2.1, caution must be taken in interpreting these results due to the broad scale of the majority of these indicators. These findings suggest that, overall, density is not found in the regression analysis to be a consistent or strong predictor of trust and reciprocity.

A feature of quality of the built environment found to have a consistent and significant association with trust is the level of maintenance of the neighbourhood. The correlation analysis shows that the indicators measuring the level of litter and the condition of homes and gardens are positively associated with trust and reciprocity (Appendix E: Table E.7).

The findings suggest that there is a weak but significant association between the two variables, which is of interest because there is no existing empirical evidence to suggest that there is a link between the maintenance of the neighbourhood and feelings of trust and reciprocity. The regression analyses show that maintenance has a positive association with trust, indicating that where the level of maintenance of the built environment is higher, respondents are more likely to report higher levels of trust and reciprocity. Further to theoretical accounts, this relationship might also incorporate indicators measuring particular features of quality of the built environment such as the perceived quality and maintenance of a neighbourhood which may contribute to general feelings of safety in the neighbourhood and so contribute to social interaction and the formation of social networks, culminating in trust. This complex association may be present in the neighbourhoods in this sample as the indicators mentioned all contribute to the prediction of trust in some way.

General opinions of the perceived quality of the neighbourhood and how people rate the quality of their neighbourhood arguably give an indication of the overall perceptions of a neighbourhood and, together with indicators of maintenance, legibility and safety, contribute to the prediction of almost 18% of the variance of trust and reciprocity. The indicators measuring perceived quality are significantly correlated with trust and reciprocity (Appendix E: Table E.9) and the variable measuring residents' perceptions of their neighbourhood as a place to live is a relatively good predictor of trust and reciprocity in the regression analysis (Table 7.11), although this should not be taken out of context: this variable contributes poorly to the prediction of trust and reciprocity.

A further feature of quality of the built environment also found to be significantly associated with trust and reciprocity is legibility. According to the findings (Table 7.11; Appendix E: Table E.5), legibility is negatively associated with trust, indicating that as legibility, or the extent of landmarks and nodes, increases, feelings of trust and reciprocity held by respondents decrease. While there is no existing empirical evidence to suggest that the extent of legibility in neighbourhoods has any influence on the feelings of trust and reciprocity that residents have in relation to their neighbours, the consistency with which legibility here is negatively associated with trust and reciprocity requires further attention.

The association between legibility and trust and reciprocity is significant but it is weak. The individual indicators measure legibility at street level; however landmarks in particular are arguably relevant at a wider scale than this, perhaps simply in the way that they are visible from more than one street. For this reason, the same data collected using this indicator are replicated in more than one street. The same can be said for the data on nodes, which are the meeting of more than one street: the same data is repeated for multiple streets, and the corresponding survey of respondents living in those streets. The

nature of these variables might therefore have had a distorting effect on the data, skewing the analysis and creating a Type I error, causing the null hypothesis of no association between the variables to be falsely rejected (Field, 2000; Tabachnick and Fidell, 2001). In this case, the findings would show a significant association between legibility and trust and reciprocity when no relationship actually exists. Even after applying a Bonferroni adjustment making the significance level more stringent (Pallant, 2001), the validity of the finding is still arguably called into question because of the lack of existing evidence. Triangulation of the data from the interviews is not possible here as the interview questions were informed by existing research which does not make a link between legibility and trust and reciprocity. Consequently, it is difficult to conclude that there is indeed a meaningful association between these variables.

The inclusiveness of the neighbourhood was also found to be a significant contributor to the prediction of the extent of trust and reciprocity among residents, suggesting that residents are more likely to report feelings of trust and reciprocity where the inclusiveness of the neighbourhood is greater. There would seem to be no indication in existing research or theory which claims that the extent of trust and reciprocity is influenced by the physical inclusiveness of the built environment. The inclusiveness indicator is considered to be a very weak predictor of trust and reciprocity as it was only found to be significant in the regression model which included intervening variables (Table 7.11: model TRU2). Furthermore, the correlation analysis shows very little evidence of a consistently significant association between these variables (Appendix E: Table E.7).

Finally, the extent of natural surveillance was found to be associated with trust and reciprocity, in an inconsistent manner. The regression analysis (Table 7.11) shows that this indicator is significantly associated with trust and reciprocity. This suggests that as the extent of active frontage increases, trust and reciprocity also increase. When intervening variables are included, this indicator of physical safety is 'kicked out' of the regression analysis due to its lack of predictive power. It is clear that the regression analysis indicates that other variables better contribute to the prediction of trust and reciprocity in the six neighbourhoods. It therefore suggests that the evidence is inconclusive as to whether those indicators measuring the physical safety of the neighbourhood are significantly associated with trust and reciprocity.

7.6.2 Intervening variables and trust and reciprocity

There are a number of non-physical, intervening variables which the findings indicate have significant associations with trust and reciprocity. A significant and negative association is found between trust and reciprocity and the indicator measuring whether

the respondent is planning to move house in the next few years or not (Table 7.11). The findings from the regression analysis show that respondents who indicate that they are planning to move house soon are less likely to report feelings of trust and reciprocity towards their neighbours. An independent samples t-test (Appendix H: Tables H.13a-c) supports this finding and shows that there is a significant difference in the reported level of trust and reciprocity between respondents who plan to move house in the next few years and those who do not. While there are different reasons behind these plans, which might relate to accommodation, area and personal circumstances, a potential *consequence* of planning to move might be the adoption (conscious or not) of a psychological sense of detachment from neighbours and other residents in the area. It might be the case that such residents do not want to engage in social interaction or develop networks of trust in a neighbourhood when they will not be settled there for much longer. If this is the case, then it might follow that there would be a positive relationship between respondents' length of residence and feelings of trust and reciprocity. Overall, however, the findings do not support this supposition: length of residence was not found to be a significant predictor of trust and reciprocity, perhaps indicating that plans to move house have more influence over residents' propensity to trust their neighbours than how long they have lived there.

Secondly, a significant relationship is found between another indicator related to resident turnover – tenure – and trust and reciprocity regarding their neighbours (Table 7.11). The findings show that respondents who own the property in which they live are more likely to report higher levels of trust and reciprocity. Further tests indicate that the mean scores of trust differ significantly by tenure (Appendix H: Tables H.14a-d). This difference is quite large between owners, private renters and those renting from the public sector (eta squared = 0.06 which is a medium-sized effect [Cohen, 1988]). While it would be a generalization to state that home owners are more likely than renters to stay in an area, it can be stated that in this sample there seems to be a significant and positive relationship between home ownership, length of residence and *no* plans to move.

Two further intervening variables significantly contribute to explaining the extent of trust and reciprocity in the neighbourhood. The analysis suggests that households with single occupants were less likely to report feelings of trust and reciprocity than other households. However when further analysis (one-way ANOVA) was conducted on this weak predictor, no real difference was actually found between different households and their feelings of trust and reciprocity. There is very little evidence to suggest that families are more likely to report feelings of trust and reciprocity than, for example, residents in single households.

In the same regression model, the indicator measuring residents' level of use of services and facilities was significantly associated with trust and reciprocity. This was also

a weak predictor of the latter indicator, suggesting that residents who used the services and facilities in the neighbourhood were more likely to report feelings of trust and reciprocity than residents who do not.

7.6.3 Summary: trust and reciprocity

While there is little suggestion in theory that the quality of the built environment has any bearing on levels of trust and reciprocity in neighbourhoods, the findings show that some features are weakly, but significantly, associated.

- The level of **maintenance**, the **legibility**, **inclusiveness**, **extent of natural surveillance** and **perceived quality** of the neighbourhood are shown to be consistently and significantly associated with trust and reciprocity.
- **Residential density** is very weakly associated with trust and reciprocity and **not** considered to be a consistent or significant predictor of the latter indicator.
- Intervening indicators significantly contribute to the prediction of variance in residents' feelings of trust and reciprocity. In particular, tenure and residents' plans to move house are significantly associated with trust and reciprocity, suggesting that there is another dimension to trust and reciprocity which relates to the residential turnover of the population in a neighbourhood. Household composition and residents' use of services and facilities are also weakly associated with trust and reciprocity.

7.7 Feelings of safety

Table 7.12 shows that a number of features of quality of the built environment are found to have a significant association with feelings of safety, as are two intervening variables. Table 7.13 shows the results from the standard multiple regression analyses.

Table 7.12 Evidence of an association between feelings of safety and other indicators

Indicator	Evidence of an association
Mixed land uses	✓
Attractiveness	✓
Maintenance	✓
Perceived quality	✓
Plans to move house	✓
Employment status	✓
Housing type	✓
Gender	✓

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

Table 7.13 Standard Multiple Regression Analysis: Z-score of safety variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SAF1. QoBE variables only	(Constant)	-3.174		0.000		
	neigh_place	0.032	0.367	0.000	0.588	1.700
	Z_muse	0.071	0.139	0.000	0.937	1.067
	appear	0.009	0.135	0.007	0.562	1.778
SAF2. QoBE variables and intervening variables	(Constant)	-2.541		0.000		
	neigh_place	0.031	0.346	0.000	0.629	1.590
	Z_muse	0.048	0.104	0.014	0.862	1.161
	appear	0.010	0.152	0.003	0.606	1.650
	plans_move	0.336	0.104	0.012	0.893	1.120
	gender	-0.376	-0.118	0.004	0.932	1.073
	emp_status_retired	-0.408	-0.106	0.013	0.846	1.181

SAF1. R = .461 R Square = .213 Adjusted R Square = .209 This indicates that 20.9% of variance in feelings of safety is explained by the variables in this model

SAF2. R = .457 R Square = .209 Adjusted R Square = .200 This indicates that 20% of variance in feelings of safety is explained by the variables in this model

7.7.1 Features of quality of the built environment and feelings of safety

Links between feelings of safety and the built environment are commonly cited in theory, policy and practice and a high quality built environment is argued to be one in which residents and users feel safe (Carmona *et al.*, 2001; Llewelyn-Davies, 2000; ODPM, 2002). The statistical findings confirm this claim to a certain degree, specifically in relation to particular features of high quality built environments. The correlation analysis shows that a number of individual variables measuring the quality of the built environment are significantly correlated with feelings of safety (Appendix E). These are, on the whole, low correlations, and in the case of those indicators measuring density, mixed use, inclusiveness and attractiveness, the direction of the significant association is inconclusive. The results from the regression analysis show that only three features of quality of the built environment are significantly associated with feelings of safety (Table 7.13).

Residents' opinions of the neighbourhood as a place to live are found to make up the most consistently associated indicator with feelings of safety among the sample. The association is positive indicating that the more highly residents rate their neighbourhood as a place to live the more likely they are to report feelings of safety. This is supported by low and positive correlation between these variables.

Residents' opinions of the attractiveness of the neighbourhood are also a significant, but a less consistent, predictive variable of feelings of safety (Table 7.13). This indicator is positively associated with feelings of safety, suggesting that the more attractive respondents perceive their neighbourhood to be, the more likely they are to feel safe walking alone there after dark. A low and positive correlation was found between these

variables which is not as strong as that between safety and the overall rating of the neighbourhood, and reflected in the smaller amount of predictive power the variable measuring perceptions of attractiveness possesses in this analysis. The interview data shows that the 67% of the sub-sample felt that an attractive neighbourhood would have a positive effect on their feelings of safety (Appendix G: Table G.11). Prescriptive theory and policy commonly cite safety and attractiveness as attributes of high quality neighbourhoods (Carmona *et al.*, 2001; DETR, 2000a; 2000b; ODPM, 2002; 2005c). While there is little evidence to suggest a consistent relationship between the variables measuring the attractiveness of the neighbourhood in terms of the extent of greenery and feelings of safety, these findings suggest that perceived attractiveness and overall rating of neighbourhoods do have a positive association with feelings of safety. There are, however, other variables which also contribute to the prediction of feelings of safety.

According to the findings of the regression analyses, the extent of services and facilities is also positively associated with perceived safety, indicating that as the number of services and facilities in a neighbourhood increases, the feelings of safety also increase (Table 7.13). While this association is weak and weakens further when other variables are included in the analysis, it is statistically significant. The correlation analysis shows that the relationship between variables measuring the extent of mixed uses and feelings of safety is predominantly very weak and positive, although two variables are negatively associated (Appendix E: Table E.2). Prescriptive and policy literature, which does not causally link feelings of insecurity or safety with high or low residential density, suggest that mixed use development in which residents feel safe is both feasible and necessary (Alexander *et al.*, 1977; Barton *et al.*, 2003; Robbins, 2004). In the theory, the claimed relationship is less clear. While it is acknowledged that mixed use development has the potential to bring about increased natural surveillance and, with it, increased feelings of security (Connolly, 2002; Jacobs, 1961), a causal link has not been found conclusively in empirical research (Williams, 2000). The regression analyses here support the supposition that mixed-use development is positively associated with increased feelings of security. However, partly due to the weakness of the extent of mixed uses as a predictor of feelings of safety and the number of other significant variables in the analyses, the findings do suggest, as Williams does, that there are other indicators which may predict the difference in residents' feelings of security more successfully.

While the regression analyses found no association between the level of maintenance of the built environment and feelings of safety, the correlation analysis and interview data suggest that there is a relationship. Low and significant correlations were found between the indicators measuring the level of litter, the condition of homes and gardens and feelings of safety ($p<0.01$) indicating that as the level of maintenance improves, feelings of

safety held by residents also increase (Appendix E: Table E.8). The interview data suggest that almost 80% of interviewees agree that litter and graffiti have a negative effect on their feelings of safety and 84% state that vandalism would have a negative effect. In addition to this, between 65-70% of the interview sample state that the built environment in a poor condition (i.e. pavements, roads, homes and gardens) would have a negative effect on their feelings of safety. These findings support the claims in the literature that a poorly maintained built environment can have detrimental psychological effects on people's sense of safety (Woolley, 2002; Worpole, 2003; DETR, 1999). However, the omission of the maintenance indicator in the regression analysis indicates that it contributes in no way to the prediction of variance in residents' feelings of safety in this sample.

7.7.2 Intervening variables and feelings of safety

There are four intervening indicators found to contribute to the prediction of feelings of safety in the regression analyses to varying degrees. Firstly, the gender of the respondent is a significant predictor of perceived safety, indicating that men are more likely to report positive feelings of safety than women. Further analyses do not, however, reveal a large difference between the feelings of safety of men and women in the sample: even though the resident's gender contributes to the prediction of the difference in feelings of safety, men do not report very different feelings of safety to women. The large proportion of female research participants may have skewed the results to show a significant association when one does not exist. In order to examine this finding in more detail, a two-way ANOVA test was conducted to examine if the age of male and female respondents has any bearing on their feelings of safety (Appendix H: tables H.15a-c). Overall, no difference was found between the reported feelings of safety of men and women of the same age, although one significant difference was found between two different age groups. These differences relate specifically to the feelings of safety reported by the 16-24 yr and 65+ yr age groups; the former reported feeling safer than the latter when walking in their neighbourhood alone after dark. A one-way ANOVA test shows that while there is a significant difference between these groups' perceived safety, it is quite small: the effect size, using eta squared, was 0.02 (Cohen, 1988; Pallant, 2001) (Appendix H: Tables H.16a-d).

Another intervening indicator which contributes to the prediction of feelings of safety is housing type. The findings suggest that respondents in different types of housing report different feelings of safety. Specifically, respondents living in flats in the sample are less likely to report feelings of safety than respondents living in other housing types. The variety of the physical form of flats makes it difficult to assess why flat dwellers might

report lesser feelings of safety than those living in detached or semi-detached properties. The Netherthorpe study site has a large proportion of purpose built flats (67%) and some analyses were conducted to examine whether feelings of safety were generally lower in this neighbourhood. The mean score of perceived safety is lower in Netherthorpe than in that of the whole sample, however, there is little evidence to suggest that this is influenced by housing type. In Netherthorpe, equal proportions of respondents – two thirds of whom live in flats – reported feeling safe and unsafe walking in their neighbourhood after dark. This is supported by the finding that over the whole sample, the actual difference between the perceived safety of residents living in flats is only significantly different from that reported by respondents in terraced houses and the size of that difference is small (however this finding is problematic because the assumption of homogeneity of variance is violated in this particular test and the results are reported here for information only [Appendix H: Table H.16a-c]).

A further intervening indicator which contributes significantly to the prediction of feelings of safety is residents' plans to move house. In the regression analysis, residents planning to move house in the next few years are more likely to report higher feelings of safety (Table 7.13). This is slightly confusing as, overall, the 'moving house' indicator has tended to be negatively associated with indicators of social cohesion, suggesting that residents who are planning to move house report lower scores on variables measuring social cohesion, not higher, as is the case here. Possible explanations for this finding were explored, including the possibility that students in the 16-24 yr age group who might have had strong feelings of safety were planning to move house in the near future. A two-way ANOVA test shows that this was not the case (Appendix H: Tables H.17a-b), but further analysis does show that there is a significant difference in feelings of safety among residents of different household income levels who are planning to move house ($p=.024$), even though this actual difference in the mean values is very small (eta squared = 0.022) (Appendix H: Tables H.18a-b). Supplementary examination also shows that there are significant differences in feelings of safety among those residents planning to move house who have a household income of less than £10,000 and those with household incomes of £30,000-£49,999 and £50,000-£79,999 (Appendix H: Tables H.19a-d). This is supported by weak but significant correlations found between plans to move house and household income, and household income and feelings of safety, suggesting that residents from households with higher incomes reported stronger feelings of safety than those from households with lower incomes (Appendix E: Table E.10). Finally, the findings from regression model SAF2 indicate that the employment status of residents contributed weakly but significantly to residents' perceived safety. The analysis suggests that residents who are retired are less likely to report feelings of safety in their neighbourhood.

On closer examination, and taking into consideration the large proportion of research participants in the sample who are retired, no significant difference was found in feelings of safety held by residents in the different employment groupings. Other indicators measuring characteristics of the sample were not found to be significantly associated with feelings of safety.

7.7.3 Summary: feelings of safety

The indicators measuring quality of the built environment predict 21% of the variance in the indicator measuring feelings of safety. When the intervening variables are added to the analysis, the predictive power of the regression model reduces slightly to 20%. These variables together are therefore poor predictors of the variance in feelings of safety held by the sample. Having said this, the statistical analysis shows that there is a number of indicators which are significantly associated with feelings of safety.

- **Residents' opinions of the neighbourhood as a place to live** and the **perceived attractiveness of the neighbourhood** and **the extent of mixed use development** are positively associated with feelings of safety in the regression analyses.
- From the correlation analysis and interview findings, the level of **maintenance** in the neighbourhood is also positively associated with feelings of safety.
- Four intervening variables are also found to be significantly associated with perceived safety – the gender, and employment status of the resident, plans to move house in the near future and housing type. Closer examination of these indicators shows very little significant difference in the reported feelings of safety between men and women, employment groupings, or residents living in different housing types. Those residents planning to move house do however report differing feelings of safety according to the average household income.

7.8 A sense of place attachment

A number of features of quality of the built environment are found to be significantly associated with the indicators measuring sense of place attachment, as Tables 7.14 and 7.15 show.

Table 7.14 Evidence of an association between sense of place attachment and other indicators

Indicator	Evidence of an association
Attractiveness	✓
Maintenance	✓
Natural surveillance	✓
Character of n'hd	✓
Perceived quality	✓
Gender	✓
Length of residence	✓
Plans to move house	✓

✓ - evidence found
? - evidence is found but very weak
¿? - evidence is inconclusive

7.8.1 Features of quality of the built environment and sense of place attachment

It is commonly cited in theory that features of quality of the built environment can contribute greatly to the sense of place attachment held by residents (Nash and Christie, 2003; Relph, 1976; CABE Space, 2005b). The findings support this hypothesis in relation to a number of features of quality. The feature of quality which most strongly predicts feelings of place attachment is found to be residents' opinions of their neighbourhood as a place to live. It is consistently found to be the most important predictor and is positively associated with sense of place attachment, indicating that those residents stating that their neighbourhood is a good place to live are more likely to report stronger feelings of attachment. This finding is supported by the correlation analysis which shows that it has a modest and significant association with feelings of place attachment (Appendix E: Table E.9). This supports theoretical discussions of place attachment, in which it is argued that the more highly the quality of the neighbourhood is rated by residents, the more attached residents feel to it.

This is also the case for the attractiveness of the neighbourhood, which theorists argue can bring about strong feelings of place attachment (CABE and DETR, 2000; Jacobs, 1961). The statistical findings support this claim; a positive and significant association is found in the regression analysis between perceived attractiveness and sense of place attachment, suggesting that the more attractive residents find a neighbourhood, the more likely they are to express feelings of place attachment. The correlation analysis supports this finding: the indicator measuring perceived attractiveness is significantly correlated with sense of place attachment. The attractiveness of the neighbourhood, measured in terms of the extent of greenery in the neighbourhood, was not however found to be conclusively associated with sense of place attachment.

Table 7.15 Standard Multiple Regression Analysis: Z-score of sense of place attachment variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SOP1. QoBE variables only	(Constant)	-4.845		0.000		
	neigh_place	0.042	0.437	0.000	0.567	1.763
	appear	0.013	0.173	0.000	0.552	1.813
	Z_maint	0.086	0.084	0.014	0.797	1.254
	frontage	0.006	0.063	0.040	0.990	1.010
SOP2. QoBE variables and intervening variables	(Constant)	-4.572		0.000		
	neigh_place	0.040	0.402	0.000	0.591	1.692
	appear	0.014	0.176	0.000	0.571	1.752
	Z_maint	0.089	0.089	0.011	0.792	1.262
	plans_move	-0.616	-0.167	0.000	0.879	1.137
	length_res	0.012	0.087	0.008	0.891	1.122
	gender	0.237	0.065	0.038	0.983	1.018

SOP1. R = .612 R Square = .375 Adjusted R Square = .371 This indicates that 37.1% of variance in feelings of place attachment is explained by the variables in this model

SOP2. R = .640 R Square = .410 Adjusted R Square = .404 This indicates that 40.4% of variance in feelings of place attachment is explained by the variables in this model

The indicators measuring the character of the neighbourhood were also found to be significantly associated with sense of place attachment. There is a low and significant correlation between these variables indicating that residents who felt their neighbourhood had its own character were more likely to report feelings of place attachment (Appendix E: Table E.9). Furthermore, a number of the interview sample who volunteered information stated that the character would have a positive effect on their sense of place attachment. The association found between these indicators should not be surprising as they are conceptually very closely linked. Due to the nature of the variables measuring the character of the neighbourhood, they could not be included in the regression analyses; significant findings are therefore confined to the correlation and interview analyses.

The maintenance of the built environment is also found to be significantly associated with place attachment, indicating that as the maintenance of the built environment increases, feelings of attachment to a place increase as well (Table 7.15). The correlation findings also show a significant association between the variables measuring the level of litter and condition of homes and gardens with sense of place attachment: very low and low respectively (Appendix E: Table E.8). This is further supported by the interview data which shows that 84% of the sample felt that the environment in good condition would contribute positively to how attached they felt to the neighbourhood. A similar proportion (86%) stated that litter, vandalism and graffiti would have a negative effect on how attached they felt to their neighbourhood, while 87% felt that well-maintained public spaces would have a positive effect on their feelings of attachment to their neighbourhood (Appendix G: Tables G.47-49). These findings support the claim in theory and policy that well-maintained neighbourhoods are more likely to have residents who respect the built

environment and feel attached to it (ODPM, 2002; Pasaogullari and Doratli, 2004; Williams and Green, 2001).

The weakest indicator in regression model SOP1 measures the extent of active street frontage. This indicator does not contribute to the prediction of sense of place attachment in the subsequent model which suggests its weak association. This is supported by the correlation analysis which shows no significant association between the indicator measuring natural surveillance and those measuring feelings of place attachment.

Together these indicators of quality of the built environment predict approximately 37% of variance in the indicator measuring place attachment, the highest amount of variance in an indicator of social cohesion accounted for by features of quality of the built environment alone. However, as has been the pattern in the analyses for other dimensions of social cohesion, the prediction rate does increase when other intervening indicators are included in the regression model.

7.8.2 Intervening variables and sense of place attachment

Intervening variables included in the analysis increase the predictive power of the regression model by just 3% bringing the amount of variance in sense of place attachment by the regression model to approximately 40% (Table 7.15: model SOP2). The intervening variable which measures residents' plans to move house in the next few years is found to contribute to the prediction of variance of residents' sense of place attachment in the regression analysis. A negative association is found between residents' plans to move and feelings of place attachment, suggesting that residents in the sample planning to move house are less likely to report strong feelings of place attachment than residents not planning to move. It is argued in theory, and supported by existing empirical research, that high population turnover can weaken people's sense of attachment to the neighbourhood (Silburn *et al.*, 1999; Willmott, 1986). The finding in the regression analysis supports this claim and an independent-samples t-test was conducted to compare the place attachment scores for residents planning to move house in the near future and those not (Appendix H: Tables H.20a-c). There was a significant difference in scores for 'movers' (mean (M) = -.7063, standard deviation (SD) = 1.86) and 'non-movers' (M = .3551, SD = 1.69; t(509) = -8.128, p = .000), however the magnitude of the difference in the means was small (eta squared = 0.02) (after Cohen, 1988; Pallant, 2001). It follows in this hypothesis that length of residence would also have a positive association with place attachment, as the lower the residential turnover, the more attached residents are argued to be. The findings support this assertion, but length of residence was not found to be as consistently significant a predictor of sense of place attachment as residents' plans to move house. The regression analysis found that length of residence is positively associated with sense

of place attachment, suggesting that the longer a resident lives in a neighbourhood, the more likely they are to report strong feelings of attachment. A two-way ANOVA test supports this finding and shows that the indicators measuring residents' plans to move house and length of residence are significantly associated with sense of place attachment (Appendix H: Tables H.21a-b). This indicates differences in the extent of place attachment between residents who have lived in their neighbourhood less than five years and those who have lived there for over ten years.

The final intervening indicator significantly associated with sense of place attachment is the gender of the respondent. According to the findings, women are more likely to feel a sense of place attachment than men. Further analysis using an independent-samples t-test shows that, while the gender of the respondent may be a contributory variable to the overall prediction of place attachment, the difference between the mean scores of place attachment for men and women was found to be very small (Appendix H: Tables H.21a-b). This may be due to the large proportion of female research participants which may overstate the significance of this association.

7.8.3 Summary: sense of place attachment

In summary, residents' sense of place attachment is positively associated with a number of features of quality of the built environment.

- A positive association was found between **residents' opinions of their neighbourhood as a place to live**, the **perceived attractiveness** and level of **maintenance**, and **character** of, the neighbourhood, and feelings of place attachment.
- Overall, the **extent of natural surveillance** of the built environment has a very weak but positive association with residents' sense of place.
- The **character of the neighbourhood** was also found to be positively associated with sense of place attachment in the correlation analysis and interview findings.
- Other intervening variables also contribute significantly to the prediction of sense of place attachment when added to the regression model: specifically residents' plans to move house and the length of residence.

The findings and analyses carried out appear to suggest that there may be a broad relationship occurring between a number of features of quality of the built environment and dimensions of social cohesion. Some of the analyses carried out in the research suggest that the indicators measuring the attractiveness and maintenance of the built environment and the perceived quality of the neighbourhood are, to varying degrees, positively associated with indicators of social cohesion measuring social interaction, social networks, sense of community, feelings of trust and reciprocity, feelings of safety and

sense of place attachment. The general supposition is that the aesthetic characteristics of the built environment contribute to residents' sense of community and sense of place attachment in the neighbourhood, which are underpinned (as with any social activity or behaviour) fundamentally by feelings of safety. This may, theoretically, lead to an increase in social interaction which may increase the extent of social networks in the neighbourhood, leading to the increased feelings of trust and reciprocity among residents found in the analysis.

Principal components analysis[1] (PCA) was conducted to examine this hypothesis by attempting to produce a number of combinations of variables 'in a way that captures (or accounts for) most of the variability in the pattern of correlations' (Pallant, 2001, p. 151). The analyses indicated that a number of these indicators 'seem to be measuring the same concept' (Bryman and Cramer, 2005, p. 324). The results of the full PCA involving all the variables measuring quality of the built environment and social cohesion are shown in Appendix H: Tables H.23a-d). Table 7.16 shows a selection of the variables in the analysis which form the principal factors. The table suggests that five of the indicators measuring social cohesion – trust and reciprocity, social interaction, sense of community, sense of place attachment and extent of social networks – are 'tapping the same concept'; here, of social cohesion (ibid., 2005). While the table shows clearly that both sense of community and sense of place attachment load most strongly onto factor 1, they are also loading, to a lesser extent, onto factor 2.

Table 7.16 Varimax Rotation of two factor solution for indicators measuring quality of the built environment and social cohesion

Indicator	Factor 1	Factor 2
z_ trust	0.832	
z_sinteract	0.780	
z_sensecomm	0.778	0.449
z_pattach	0.689	0.492
z_sntwrks	0.537	
z_attract_perc		0.719
z_maintenance		0.624
z_ sc_safety		0.577

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 8 iterations.

Factor 2 is comprised of residents' perceptions of the attractiveness of the neighbourhood, the level of maintenance of the neighbourhood and residents' perceived feelings of safety.

[1] Principal components analysis is one technique within the 'family' of factor analysis (Pallant, 2001) which is described in Chapter Four.

This second factor, with the suggested loadings of the indicators measuring sense of community and sense of place attachment, supports the supposition, to a certain point, that there may be some association between two of the indicators measuring quality of the built environment, and three of those measuring social cohesion. It is, however, clear in the factor analysis that the indicators measuring social interaction and social networks do not load onto this second factor, despite the significant association between the maintenance of the built environment and social interaction. It can therefore be inferred from this PCA exercise that the attractiveness and maintenance of the built environment together are related to residents' feelings of safety and, to a lesser extent, their sense of community and feelings of place attachment. This perhaps suggests that the aesthetic attributes of a high quality built environment do contribute in some way to feelings of safety, which in turn may lead to an increase in sense of community and feelings of place attachment. These dimensions of social cohesion may then contribute to increased social interaction and, to a lesser extent, social networks.

7.9 Conclusions

This chapter has presented evidence which illustrates the relationship between the features that constitute a high quality built environment and social cohesion. Table 7.17 overleaf shows the associations found in the research between the indicators measuring features of quality of the built environment and those measuring individual dimensions of social cohesion, as well as associations between the latter and intervening variables. It is apparent from the findings that the features of quality of the built environment are associated with the dimensions of social cohesion in different ways, positive as well as negative. To gain an overall perspective and to identify those features of high quality in the built environment most likely to support social cohesion in English neighbourhoods, an examination of the individual features of quality of the built environment is conducted. This is the subject of Chapter Eight.

Table 7.17 Significant associations between features of quality of the built environment and intervening variables, and dimensions of social cohesion

Feature of quality of the built environment	Indicator of social cohesion						
	Social interaction	Social networks	Sense of community	P'cipation in org'zed activities	Trust and reciprocity	Feelings of safety	Sense of place attachment
High res. density	–				?		
Mixed land uses				¿?		+	
Accessibility	+						
Connectedness and permeability							
Legibility					¿?		
Attractiveness			+			+	+
Inclusiveness				¿?	?		
Maintenance	+		+		+	+	+
Natural surveillance	+		+		?		+
Character of n'hd			+				+
Perceived quality	+	+	+		+	+	+
Gender			?	¿?		–	+
No in household		+					
Household income	¿?						
Tenure	–			–	+		
Plans to move house	–	?	–		–	+	–
Length of residence			+				+
Use of servs in n'hd	+		+	+	?		
Household composition					?		
Housing type						–	
Employment status						–	

+ evidence of a positive association; – evidence of a negative association; ? evidence is very weak; ¿? evidence is inconclusive

Chapter Eight

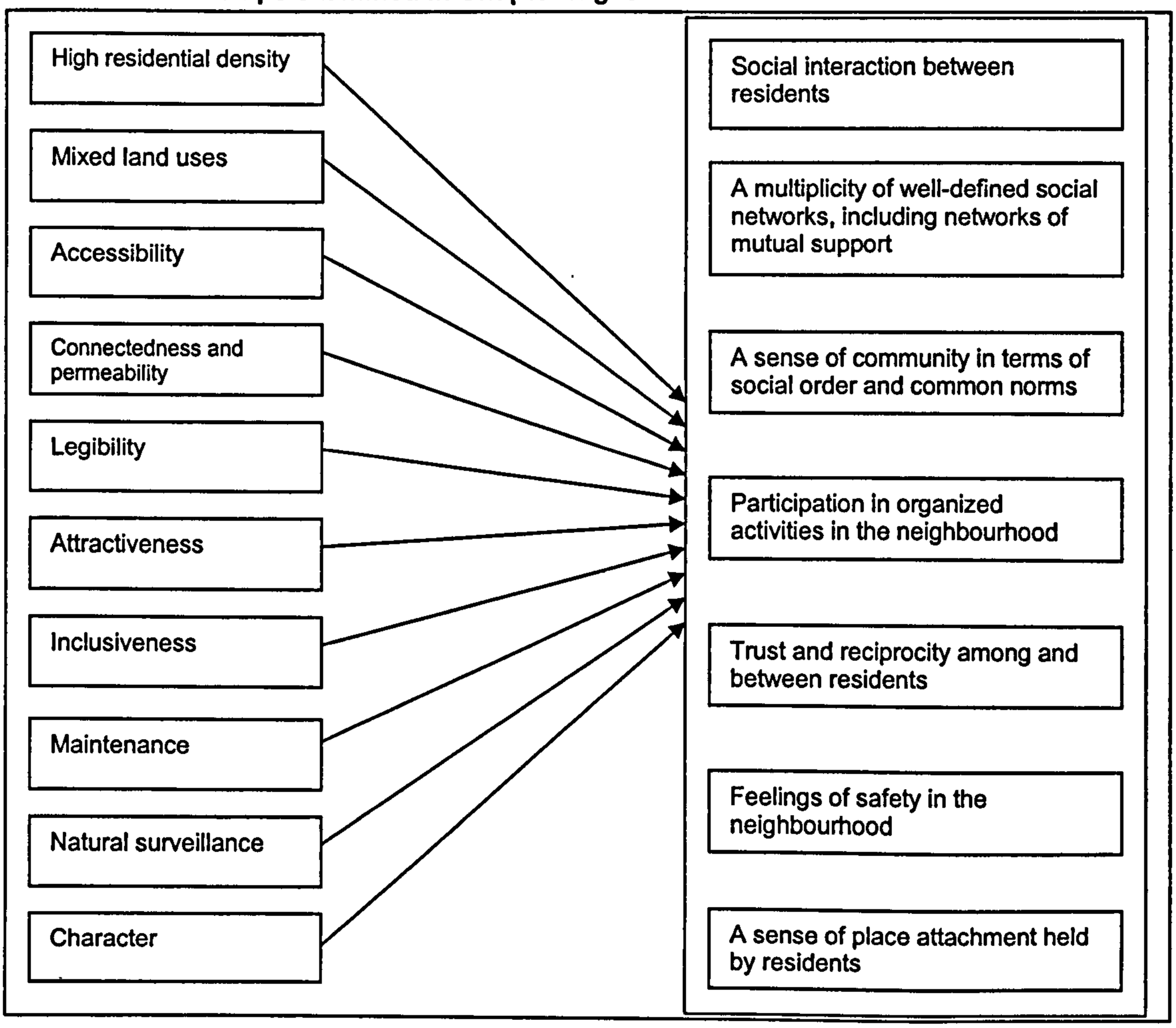
Features of Quality of the Built Environment which Support Social Cohesion

Chapter Eight – Features of Quality of the Built Environment which Support Social Cohesion

8.1 Introduction

This chapter focuses on the remaining research objective: to identify those features of high quality in the built environment most likely to support social cohesion in English neighbourhoods. The relationship between the features that constitute a high quality built environment and social cohesion, and the nature and extent of this relationship were established in Chapter Seven; the specific features of quality of the built environment found to support social cohesion now need to be determined. To do this, each feature of quality of the built environment is examined in turn. Box 8.1 illustrates how this is done: the evidence for the potential of each feature of quality of the built environment to support the dimensions of social cohesion overall is identified.

Box 8.1 Relationships examined in Chapter Eight



In Chapter Seven, the significant associations of features of quality of the built environment with separate dimensions of social cohesion were discussed in detail. In this chapter, further detail is provided about non-significant, very weak and inconclusive associations and the implications they may have, as well as those of significant associations, for the relationships features of quality of the built environment are said to have with social cohesion. Each of the following sections discusses the findings to determine to what extent particular features of quality of the built environment support social cohesion.

To determine the nature of relationships between indicators, the relationships that the composite indicators measuring features of quality have with the composite indicators measuring dimensions of social cohesion taking into account the influence of other, intervening (or interfering) variables were examined through regression analysis and reported in the tables in each of the following sections. Further to this, correlation findings were consulted which identify the association between individual indicators measuring quality of the built environment and individual indicators measuring social cohesion. These findings were then triangulated, where possible, with the findings from the interview analysis. As was the case in Chapter Seven, it is not claimed here that the results presented in this chapter are representative of neighbourhoods found in Oxford and Sheffield, nor of English neighbourhoods: the findings relate to the six neighbourhoods examined in the research.

8.2 High residential density and social cohesion

The findings suggest that high residential density does not have a consistently significant association with dimensions of social cohesion. Table 8.1 shows the significant associations that density has with dimensions of social cohesion which emerged from the statistical analyses.

Table 8.1 Evidence of an association between density and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	✓	weak	negative
Social networks	×		
Sense of community	×		
Participation in organized activities	×		
Trust and reciprocity	✓	very weak	negative
Feelings of safety	×		
Sense of place attachment	×		

✓ - evidence found
× - no evidence found

8.2.1 High residential density and social interaction

As Chapter Seven indicated, the density of a neighbourhood is weakly and significantly associated with social interaction when only certain indicators are examined. Those indicators measuring the 'negative' aspect of social interaction, that is to say the extent to which respondents do not know or avoid their neighbours, were found to be significantly associated with indicators of density. Density is found to be the most important predictor of this 'negative' aspect of social interaction in the regression analysis examining the influence of indicators measuring quality of the built environment, but its importance is reduced when other, intervening, indicators are included in the statistical model (Appendix F: Tables F.4-F.6). The results indicate that as the density of the neighbourhood increases, respondents are more likely to report that they do not know or that they avoid their neighbours. The residential density of the neighbourhood has no significant association with the variables measuring social interaction as a whole, suggesting that respondents' positive social activity is not increased by the density of their neighbourhood. This can also be said for the majority of the other dimensions of social cohesion: density is not statistically or significantly associated with them.

8.2.2 High residential density and feelings of trust and reciprocity

Just one further dimension of social cohesion is found to be influenced, in a very small way, by the residential density of the neighbourhood. In the regression analysis which examined the relationship between feelings of trust and reciprocity and features of quality of the built environment, the density of the neighbourhood was found to be significantly, but very weakly and negatively, associated with the former dimension of social cohesion. The findings from the correlation analysis on the whole also show a very low and negative association between the indicators. The analysis suggests that as the density of the neighbourhood increases, the likelihood of respondents stating that they trust their neighbours decreases. However, this is only the case when features of quality of the built environment are included in the analysis: density is rendered insignificant when other variables are introduced into the analysis. For this reason, residential density is unlikely to be an important predictor of residents' feelings of safety.

While the indicators themselves were reliable and robust in the analyses, the actual residential densities of the neighbourhoods should be considered when conclusions are drawn about the association they have with dimensions of social cohesion. For example, the indicator measuring the number of households per hectare can be viewed (with caution) alongside the national density figures measuring dwellings per hectare. As Chapter Two (Section 2.10.2) outlined, 'high' residential densities range from the national

recommendation of 30-50 dwellings per hectare (Department of the Environment Transport and the Regions [DETR], 2000b) to flagship housing developments with actual residential densities of 95-119 dwellings per hectare (Dawson, 2004). The actual (net) residential densities in the six study sites range from 26 to 80 households per hectare, but four of them have similar densities, from 43 to 51 households per hectare. The reliability of these study sites, in terms of the limited variety they display of residential densities, might therefore be called into question; levels of social cohesion may drop where the net residential density rises only slightly. Net residential density of a neighbourhood makes up just one part of one of ten features of quality of the built environment, and, as Chapter Four indicates, it is not the purpose of this research to pre-designate neighbourhoods as high or low quality (or high or low net residential density) and select them on this basis. For this reason some of the neighbourhoods may score similarly on different indicators. Therefore such similarities are borne in mind throughout the analysis.

8.2.3 Summary: high residential density and social cohesion

The findings in this research show that high residential density is not consistently significantly associated with dimensions of social cohesion. Table 8.1 shows that there is no evidence to suggest that residential density has any influence on residents' social networks, sense of community, participation in organized activities, feelings of safety or feelings of place attachment. However, residential density *is* found to have an association with those indicators measuring the 'negative' aspect of social interaction: the higher the density of the neighbourhood, the more likely the respondents living there are to report not knowing or avoiding their neighbours. This supports existing empirical research which challenges the theoretical claims that higher densities bring about increased social interaction (Raman, 2005). Other indicators are more significantly associated with this aspect of social interaction, indicating that the density of the neighbourhood is not an important predictor of dimensions of social cohesion in the six study sites. These indicators might include the physical form of the built environment, such as the location, spatial configuration or the layout, which Raman found to be significantly associated with social interaction (ibid.). Other indicators are also more significantly associated with trust and reciprocity which is illustrated in the very weak and inconsistent association found between density and levels of trust and reciprocity. It can therefore be argued from these empirical findings that high residential density alone is not likely to support social cohesion in these six English neighbourhoods.

8.3 Mixed land uses and social cohesion

The findings, discussed in Chapter 7, suggest that the extent of mixed land uses in a neighbourhood has some significant association with a number of dimensions of social cohesion. However, as Table 8.2 shows, the nature of this association is unclear. The analyses show that the extent of mixed land uses was positively associated with feelings of safety held by respondents, and negatively associated with levels of participation in organized activities.

Table 8.2 Evidence of an association between mixed land uses and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	×		
Social networks	×		
Sense of community	×		
Participation in organized activities	✓	inconclusive	inconclusive
Trust and reciprocity	×		
Feelings of safety	✓	weak	positive
Sense of place attachment	×		

✓ - evidence found
× - no evidence found

8.3.1 Mixed land uses and participation in organized activities

It was not assumed that the direction of any relationship between the built environment and social cohesion should be positive, however, it is initially surprising that the extent of services and facilities in a neighbourhood is negatively associated in the analysis with a number of indicators measuring participation in organized activities. This indicates that as the extent of services and facilities increases, the level of participation in organized activities decreases. Section 7.5 discusses in detail why this cannot be accepted at face value: the nature of the indicators measuring participation in organized activities precludes any robust conclusions about the relationship participation has with the extent of mixed land uses, in part because the services and facilities which make up each of the indicators are distinct. Furthermore, the indicators measuring participation cannot be combined to create a 'headline' composite variable because of the nature of these specific variables (Section 7.5 discusses this in more detail). In addition, the negative association between a number of the indicators measuring participation in organized activities is not supported by the findings of the semi-structured interviews. The interview data suggests that respondents feel that there is a positive association between the provision of services and facilities and participation in organized activities. However, again, the nature of the indicators (as outlined in Section 7.5) prevents the researcher from taking these findings as robust empirical evidence that such an association exists. It is therefore impossible

from these findings to reach a satisfactory conclusion about the influence that the provision of services and facilities might have on levels of participation in organized activities.

8.3.2 Mixed land uses and feelings of safety

A clearer association is found between the extent of services and facilities and feelings of safety. The analysis shows that there is a positive association between the two, indicating that as the extent of services and facilities in a neighbourhood increases, so do feelings of safety held by residents. This association is weak but statistically significant and reflected in the correlation analysis. While it is not possible to triangulate these findings with those of the semi-structured interview, it is concluded that this positive association between the extent of mixed uses and respondents' feelings of safety is robust and not due to sampling or other errors. As Chapter Seven (Section 7.7) indicates, empirical evidence is inconclusive in finding a causal link between mixed uses and perceived safety (Williams, 2000). However, the weak nature of the association indicates that it is not possible to conclude with any real certainty that the greater the number of services and facilities in a neighbourhood the safer residents feel.

8.3.3 Summary: mixed land uses and social cohesion

The findings in this research, summarized in Table 8.2, show that the extent of mixed uses is not consistently associated with dimensions of social cohesion. The regression analyses provide no evidence to suggest that the extent of services and facilities in a neighbourhood has any influence on social interaction in the neighbourhood, residents' social networks, sense of community, levels of trust and reciprocity or sense of place attachment. Having said this, weak but significant associations are found between the extent of mixed land uses and two dimensions of social cohesion. An association is found between the extent of mixed land uses and the level of participation in organized activities, but it is not possible to comment with any certainty from the results on its strength and direction. This seemingly paradoxical association, on closer analysis, is due to inconsistencies in the variables and therefore no conclusive statement can be made about whether or not the extent of mixed use development supports this dimension of social cohesion. The extent of mixed land uses is however found to have a less complex association with feelings of safety. The statistical association between the variables is positive and very weak. This weakness illustrates that there are other features of quality of the built environment and intervening variables which are more important predictors of dimensions of social cohesion than the extent of mixed use development. The findings

therefore suggest that mixed land uses have a limited effect on supporting social cohesion in these six English neighbourhoods.

8.4 Accessibility and social cohesion

The empirical findings indicate that there are, at least statistically, some associations between the accessibility of the built environment and dimensions of social cohesion. Accessibility here relates to the level of access that residents have to public transport, rather than to open space. This latter measure of accessibility was not found to be associated with any dimension of social cohesion. Table 8.3 summarizes the findings.

Table 8.3 Evidence of an association between accessibility to public transport and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	✓	weak	positive
Social networks	×		
Sense of community	×		
Participation in organized activities	×		
Trust and reciprocity	×		
Feelings of safety	×		
Sense of place attachment	×		

✓ - evidence found
× - no evidence found

8.4.1 Accessibility and social interaction

Both the statistical analysis and the findings from the semi-structured interviews indicate a positive, albeit weak, association between the access which residents have to public transport and social interaction. This suggests that as accessibility to public transport increases so does the extent of social interaction in the neighbourhood. This significant association is found both when features of quality of the built environment are examined and when intervening variables are included in the analysis, indicating that it is consistently associated with the prediction of social interaction, as well as being supported by the interview data. This finding supports prescriptive research which suggests that more people out and about in a neighbourhood who are not dependent on a car can increase opportunities for social interaction (Barton *et al.*, 2003, p. 28). However, despite its statistical significance, the importance of accessibility as a predictive indicator of social interaction does decrease in the regression analyses when other intervening variables are added.

8.4.2 Summary: accessibility and social cohesion

Table 8.3 summarizes the findings in relation to the associations that accessibility to public transport has with dimensions of social cohesion. The other indicators of accessibility, relating to public open space, are not found to be significantly associated with any dimension of social cohesion. Accessibility to public transport is significantly and consistently associated with only one dimension of social cohesion, social interaction.

8.5 Connectedness and permeability and social cohesion

The composite indicator measuring connectedness and permeability of the built environment represents the only feature of quality of the built environment not to have a significant association with any dimension of social cohesion in the regression analyses (Table 8.4).

Table 8.4 Evidence of an association between connectedness and permeability and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	×		
Social networks	×		
Sense of community	×		
Participation in organized activities	×		
Trust and reciprocity	×		
Feelings of safety	×		
Sense of place attachment	×		

✓ - evidence found
× - no evidence found

In the correlation analysis, connectedness and permeability on the whole had very weak to negligible associations with indicators measuring the dimensions of social cohesion. The interview data however do not support these statistical findings. When asked what effect a neighbourhood which is easy to walk around might have on dimensions of social cohesion, the majority of interviewees responded positively. Between 74 and 78% of interviewees agree that a neighbourhood which is easy to walk around would have a positive effect on their feelings of safety in the neighbourhood, the opportunities they have to interact with other people, and their levels of participation in organized activities. Over 84% of the sample agree that a neighbourhood which is easy to walk around would have a positive effect on their feelings of place attachment and their sense of community. While this interview question was intended to collect data on the perceived connectedness of the neighbourhood, it might be the case that interviewees may have been considering the legibility or the accessibility to, for example, services and facilities, when answering this

question. It cannot therefore conclusively be assumed that interviewees understood 'easy to walk around' in the way it was intended.

If there was convergence on the interpretation of the question by interviewee and researcher, it would nevertheless be erroneous to expect the statistical findings always to reflect interview results, because the interviewees were asked a hypothetical question whereas the statistical analyses related to the actual levels of connectedness and permeability at a street and neighbourhood level. Indicators of connectedness and permeability, like all the indicators in this research, are measures on a continuum: in other words, there is no set value or point which, if a neighbourhood or street reaches or surpasses, means that it can then be described as well-connected or poorly-connected. These two sets of distinct indicators (the hypothetical question and the indicators on a continuum), despite measuring the same feature of quality, do it in different and incompatible ways. Therefore, to ask interviewees to make a judgement, not only on how to define 'easiness' in getting around a neighbourhood, but also on how an easy neighbourhood to get around affects particular social activities and to compare this with findings related to objectively determined data, is unsuitable. In the light of the associations found, not through the statistical analyses using the larger household survey sample, but from the sub-sample of interviewees (n=102), and from only one of the three sources of data analysis (the interviews), it cannot be concluded that there is a meaningful association between connectedness and permeability of the neighbourhood and dimensions of social cohesion in these six neighbourhoods.

8.5.1 Summary: connectedness and permeability and social cohesion

To summarize, Table 8.4 shows that there is no evidence to suggest that there is a relationship between the connectedness and permeability of a neighbourhood and dimensions of social cohesion. Connectedness and permeability of the built environment is argued by prescriptive theorists to contribute to positive social interaction (Bentley *et al.*, 1985), and countered elsewhere as having the potential to contribute to negative social interaction attracting undesirables and vagrants (Carmona *et al.*, 2003). These findings are not sufficient to support either claim; the statistical analyses indicate no relationship between connectedness and permeability and the dimensions of social interaction. However, the existence of associations between these indicators cannot be ruled out as the interview data provided a small indication that, hypothetically at least, residents feel that the better connected their neighbourhood, the more likely they are to interact with neighbours, feel safe in their neighbourhood, participate in organized activities, feel attached to, and have a sense of community within, their neighbourhood. These findings

do not indicate that connectedness and permeability support social cohesion in these six neighbourhoods.

8.6 Legibility and social cohesion

Table 8.5 shows that two significant associations are found between legibility of the built environment and dimensions of social cohesion.

Table 8.5 Evidence of an association between legibility and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	✓	very weak	negative
Social networks	x		
Sense of community	x		
Participation in organized activities	x		
Trust and reciprocity	✓	inconclusive	negative
Feelings of safety	x		
Sense of place attachment	x		

✓ - evidence found
x - no evidence found

8.6.1 Legibility and social interaction

Firstly, the findings suggest that legibility is significantly associated with the 'negative' aspect of social interaction, indicating that as the legibility of a neighbourhood increases the likelihood of respondents reporting that they avoid or do not know their neighbours also increases. This indirectly supports the assumptions held by some theorists that a legible built environment can lead to its increased use by undesirables and vagrants, and may lead to less positive social interaction on the part of residents (Carmona *et al.*, 2003). Legibility as a predictor of the 'negative' aspects only of social interaction features relatively consistently in the analysis; however, it should be noted that this association is weak and legibility becomes an increasingly unimportant predictor of this aspect of social interaction as intervening variables are included in the analysis. Furthermore, it was not discussed in Chapter Seven, because it made no contribution to the prediction of social interaction as a whole. While legibility contributes to explaining the variance in the 'negative' aspect of social interaction, it is a very weak predictor, and other indicators better explain the variance in this dimension of social cohesion.

8.6.2 Legibility and feelings of safety/ sense of place attachment

Legibility is discussed by prescriptive theorists as increasing people's feelings of safety and sense of place in terms of their orientation and wayfinding within a place (Burton and Mitchell, 2006; Kelly, 2001b; Lynch, 1960). In this way, legibility is conceptually linked to the connectedness and permeability of a place which together are argued to contribute to

these feelings of safety and place attachment (after Rapoport, 1972). The findings do not support any of these claims. While it should be noted that such a relationship cannot be ruled out altogether because of the possibility of statistical error in the analyses, legibility does not seem to be a significant predictor of perceived safety or feelings of place attachment in the analysis nor does legibility appear to be a contributory predictor of dimensions of social cohesion alongside indicators measuring connectedness and permeability.

8.6.3 Legibility and trust and reciprocity

Legibility is however found to be significantly associated with feelings of trust and reciprocity. But, according to the findings, legibility and trust and reciprocity are negatively associated, indicating that as the legibility of the built environment increases, trust and reciprocity that respondents feel towards their neighbours decreases. This, as Section 7.6 highlights is surprising in light of the absence of empirical evidence or theory directly linking these concepts. Chapter Seven also indicates why this finding cannot be assumed to be significantly related to respondents' trust and reciprocity, in the light of the possibility of the variables measuring legibility contributing to statistical error. For this reason, it is concluded that the findings are inconclusive in providing evidence of an association between legibility and this dimension of social cohesion.

8.6.4 Summary: legibility and social cohesion

Table 8.5 shows where evidence is provided from the analyses of an association between legibility and the dimensions of social cohesion. On the whole there is very little evidence to suggest any association; however, the analysis *does* indicate that legibility contributes to the prediction of the negative aspect of social interaction. While this is a weak association, it is consistent and legibility can therefore be said to a contributory factor to this aspect of social interaction. Less clear is the association between legibility and residents' levels of trust and reciprocity. Due to the possibility of statistical error, it is concluded that the findings do not provide sufficient evidence of such an association. Furthermore, despite the indications in prescriptive theory that legibility contributes to feelings of safety and place attachment, the findings do seem to show any significant associations between legibility and these, or any other, dimensions of social cohesion. This seems to indicate that, in these six English neighbourhoods, the findings do not show any strong evidence that legibility supports social cohesion.

8.7 Attractiveness and social cohesion

The findings show that there are a number of significant positive associations between the attractiveness of the built environment and dimensions of social cohesion. For the most part, the significant associations are found to occur with only one of the variables measuring attractiveness: residents' opinions of the appearance of their neighbourhood (Table 8.6). However, an association is also found with those variables measuring the extent of greenery, the other aspect of attractiveness measured in the research.

Table 8.6 Evidence of an association between perceived attractiveness and social cohesion with intervening variables are taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	x		
Social networks	x		
Sense of community	✓	medium	positive
Participation in organized activities	x		
Trust and reciprocity	x		
Feelings of safety	✓	weak	positive
Sense of place attachment	✓	medium	positive

✓ - evidence found

x - no evidence found

8.7.1 Attractiveness and sense of community

Firstly, residents' perceptions of attractiveness were found to be significantly associated with the sense of community of residents in a neighbourhood. The statistical analysis shows a positive association between the indicators, suggesting that as perceptions of the attractiveness of the neighbourhood increase, the sense of community also increases. This is supported by the correlation analysis, and the interview data which showed that 83% of the sample agreed that an attractive neighbourhood would have a positive effect on their sense of community. This finding supports claims made in theory that the attractiveness of a place contributes positively to people's sense of community (Institute of Highway Incorporated Engineers, 2002). However, another finding of this research suggests that the association between attractiveness and sense of community is not clear. One indicator measuring sense of community, put to the interview sample, relates to respondents' opinions of whether people get on well together in their neighbourhood. The analysis shows that this indicator is negatively associated with the indicators measuring the extent of greenery, suggesting that as the amount of open green space increases, sense of community decreases. This suggests that in this sample the sense of community is lower in neighbourhoods with access to more green open space. There is no prescriptive or theoretical evidence corroborating this finding; advice tends to ascribe a sense of community, in part, to access to public open space (CABE Space, 2005a; 2005b;

Pasaogullari and Doratli, 2004). It might be that the larger areas of public open space in those neighbourhoods where sense of community is lower may be of a poorer quality than open space in other neighbourhoods, which is argued to be important in assessing a sense of community (Baxter and Associates, 1998). The quality of public open space was not directly measured in this research and so it is impossible to ascertain whether this had any bearing on responses to this indicator measuring sense of community.

8.7.2 Attractiveness and feelings of safety

Feelings of safety are found to be predictable, in part, by residents' opinions of the attractiveness of a neighbourhood. This positive association, found in all analyses indicates that the more attractive residents find their neighbourhood, the more likely they are to report feelings of safety. This finding is supported by the correlation analysis and the interview data which shows that 82% of the sample agreed that an attractive neighbourhood would have a positive effect on their feelings of safety. As Section 7.7 indicated, theory does not directly and causally link attractiveness of a neighbourhood to feelings of safety, but it is argued that along with other factors (such as the maintenance of the neighbourhood) it can contribute to feelings of safety (Cheetham, 1994; Nash and Christie, 2003). The findings seem to support this supposition as attractiveness was found to contribute, alongside other variables, to residents' feelings of safety.

8.7.3 Attractiveness and sense of place attachment

Residents' opinions on the attractiveness of a neighbourhood also predicted one further relationship to a dimension of social cohesion: residents' sense of place attachment. The statistical analyses all suggest that there is a positive association between the perceived attractiveness of a neighbourhood and residents' sense of place attachment, indicating that the more attractive the neighbourhood is felt to be, the more attached residents feel to it. This is supported by the interview data, which found that over 90% of interviewees felt that an attractive neighbourhood would have a positive effect on their feelings of place attachment. This supports existing claims in theory and prescriptive research (Aldous, 1992; CABE and DETR, 2000; Jacobs, 1993). While this indicator, perceived attractiveness of a neighbourhood, is not the only predictor of residents' sense of place attachment, it is a strong and consistent indicator across the analyses.

8.7.4 Summary: attractiveness and social cohesion

In summary, perceptions of attractiveness of a neighbourhood, rather than the other indicator of attractiveness, the extent of greenery, is found positively associated with three

of the seven dimensions of social cohesion. It is somewhat surprising that no statistically significant association was found between the extent of greenery and dimensions of social cohesion, particularly in the light of the claims made of the important contribution it makes to social activity and behaviour (DETR, 2000a; Carmona *et al.*, 2001; CABE Space, 2005a). The indicator measuring residents' perceptions of attractiveness of the neighbourhood ranges from being a relatively weak predictor of safety to being a strong predictor of residents' sense of community and sense of place attachment (see Table 8.6). These findings support, to varying degrees, existing theoretical and prescriptive accounts of how attractiveness of the built environment influences dimensions of social cohesion (Carmona *et al.*, 2001; Gehl, 2001). The extent to which it is associated with trust and reciprocity, despite the statistical significance, is unclear and its association with feelings of safety seems to hinge on the inclusion of other variables. However, it *is* clear that this indicator of the attractiveness of the built environment is a good predictor both of residents' sense of community and sense of place attachment. Therefore it can be argued that attractiveness contributes to a number of dimensions of social cohesion in the six English neighbourhoods.

8.8 Inclusiveness and social cohesion

The findings show that the inclusiveness of the built environment was very weakly associated with two dimensions of social cohesion. Table 8.7 shows the findings from the regression analysis.

8.8.1 Inclusiveness and participation in organized activities

Firstly, inclusiveness is found to be very weakly and inconsistently associated with respondents' participation in sports groups. The finding indicates that the greater the inclusiveness of the built environment in a neighbourhood, the greater the participation in sports groups. This finding was not discussed in Chapter Seven, because it related to only one of the six indicators measuring participation in organized activities, and because the association was so weak.

It is unclear why the inclusiveness of the neighbourhood is associated with only one of the six indicators measuring participation and there is no suggestion in the findings of a significant association with any of the other indicators. However the weakness of the indicator as a predictor of participation in sports groups alone perhaps indicates that some statistical error may be involved.

Table 8.7 Evidence of an association between inclusiveness and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	×		
Social networks	×		
Sense of community	×		
Participation in organized activities (sports)	✓	very weak	positive
Trust and reciprocity	✓	very weak	positive
Feelings of safety	×		
Sense of place attachment	×		

✓ - evidence found
× - no evidence found

While it could be argued that accessibility has a positive effect on the level of participation in organized sport for certain groups of residents, such as young families, disabled and older people, common sense cannot explain why inclusiveness was not associated with other organized activities. For this reason, evidence about the association which the inclusiveness of a neighbourhood has on participation in sports groups is considered to be inconclusive.

8.8.2 Inclusiveness and trust and reciprocity

The other dimension of social cohesion with which the inclusiveness of the built environment is found to have a significant association is trust and reciprocity. According to the findings, the inclusiveness of the built environment is positively and weakly associated with this dimension of social cohesion, suggesting that as inclusiveness increases so do residents' feelings of trust and reciprocity. There is no theoretical literature identifying the inclusiveness of the built environment as an explanatory factor of residents' feelings of trust and reciprocity. Chapter Seven outlined a possible explanation that inclusiveness of the built environment is one of several indicators which together contribute to the prediction of residents' feelings of trust and reciprocity. While this may be so, it should be noted that, despite the statistical significance of the association, and perhaps unsurprisingly, inclusiveness of the built environment is not the most important predictor of trust and reciprocity.

8.8.3 Summary: inclusiveness and social cohesion

Table 8.7 illustrates with which dimensions of social cohesion the findings show inclusiveness of the built environment to be significantly associated. There is evidence suggesting that there is a significant association with feelings of trust and reciprocity, although a possible explanation for this is that it is only one of several contributory variables predicting feelings of trust and reciprocity. The findings are inconclusive about

the nature and strength of the association between inclusiveness of the built environment and participation in organized activities. This is largely because participation in only one of the six organized activities (sports groups) is found to be significantly and very weakly associated with inclusiveness. These findings, overall, therefore suggest that the inclusiveness of the built environment does not support social cohesion in the six English neighbourhoods.

8.9 Maintenance and social cohesion

The findings show that the maintenance of the built environment is significantly associated with a number of dimensions of social cohesion. These associations are, on the whole, relatively strong, and are found to be consistently significant (Table 8.8).

Table 8.8 Evidence of an association between maintenance and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	✓	weak	positive
Social networks	×		
Sense of community	✓	fairly weak	positive
Participation in organized activities	×		
Trust and reciprocity	✓	fairly weak	positive
Feelings of safety	✓	weak	positive
Sense of place attachment	✓	fairly weak	positive

✓ - evidence found
× - no evidence found

8.9.1 Maintenance and social interaction

Maintenance of the built environment is found to be significantly, but weakly, associated with social interaction, suggesting that as the level of maintenance of the built environment increases, social interaction also increases. This is supported by very weak but significant correlations as well as by data from the interviews. As Section 7.2 highlighted, the presence of litter and graffiti, as well as the poor condition of the built environment, does not conclusively have positive or negative effects on residents' social interaction. The interview data showed that 46% of interviewees agree that a built environment in good condition would have a positive effect on social interaction, while 39% felt that it would have no effect. It is suggested in Chapter Seven that a reason for the weakness of the predictive power of this feature of quality on social interaction is due to a more complex relationship that might occur involving more than one feature of quality of the built environment. This is discussed in more detail in Section 7.8.

8.9.2 Maintenance and sense of community

The association that maintenance of the built environment is found to have with residents' perceived sense of community is stronger than its relationship with social interaction. The regression analysis indicates that maintenance is a significant predictor of residents' sense of community; this is confirmed by the positive correlations found and the interview data. The majority of interviewees (over 70%) agreed that a built environment in good condition would have a positive effect on their perceived sense of community. As Section 7.4 indicated, this supports theoretical claims that the sense of community increases with better maintenance of the built environment (Baxter and Associates, 1998; ODPM, 2002). Incidentally, interviewees did state that a neighbourhood with a poor built environment would also have a positive effect on the sense of community; this however was largely due to residents indicating that they would want to do something to improve the maintenance of the built environment (interviewees OC640; OC662; SC602; SO464).

8.9.3 Maintenance and trust and reciprocity

The maintenance of the built environment is also found to be associated with residents' feelings of trust and reciprocity towards their neighbours. The findings show that as the level of maintenance of the built environment increases, feelings of trust and reciprocity also increase. This is supported by weak but positive correlations suggesting the same type of association. As Chapter Seven shows, there are no accounts in theory or empirical research making a link between maintenance of the built environment and residents' trust and reciprocity, suggesting that something more complicated may be occurring. It may be, for example, that trust and reciprocal relations are a by-product of increased social interaction, which in turn is supported by a well-maintained and attractive neighbourhood. This possible explanation is explored in more detail in Section 7.9.

8.9.4 Maintenance and feelings of safety

The findings show that the level of maintenance of the built environment has a significant association with residents' feelings of safety in a neighbourhood. The nature of the association is positive, indicating that people's feelings of safety increase as the level of maintenance of the built environment increases. This is supported by the correlation analysis, and also by the interview data which found that large percentages of the sample agreed that aspects of maintenance of the built environment such as presence of litter (84%) and graffiti (79%), and homes and gardens in poor condition (71%), would have a negative effect on feelings of safety. Section 7.7 suggests that these findings support the

evidence in theory and empirical research that a poorly maintained built environment can have a negative psychological influence on residents' feelings of safety.

8.9.5 Maintenance and sense of place attachment

The findings also show that the level of maintenance of the built environment has a positive association with residents' perceptions of place attachment. The statistical analysis suggests that the better maintained the built environment, the more attached residents feel to their neighbourhood. This is supported by the interview data which shows that over 84% of the sample agreed that a built environment in good condition would have a positive effect on people's feelings of place attachment. The findings related to three dimensions of social cohesion, feelings of safety, sense of community and sense of place attachment, support the theory of 'broken windows' (Wilson and Kelling, 1982, in Kelling and Coles, 1996). This theory claims that 'residents withdraw from a neglected and uncared-for street environment' (Connolly, 2003, p. 20), with the effect of a reduction in feelings of security because there could be evidence of increased criminal damage due to a lack of formal and informal policing (ibid.) which detrimentally affects the way that residents identify with, and feel attached to, a neighbourhood (CABE Space, 2004). This is discussed in more detail in Chapter Nine.

8.9.6 Summary: maintenance and social cohesion

Table 8.8 shows that there is clear evidence of a significant association between the maintenance of the built environment and several dimensions of social cohesion. All of the associations are shown in the analyses are positive, indicating that the level of social cohesion, as measured by the specific indicators, increases as the level of maintenance of the built environment increases. The analysis does suggest, however, that, while the indicators measuring maintenance are found to be independently associated with five of the dimensions of social cohesion, there may be a more complicated relationship between them. Furthermore, Chapter Seven also indicated that this relationship may include a number of features of quality of the built environment as well as multiple dimensions of social cohesion. Chapter Nine examines this supposition in more detail.

8.10 Natural surveillance and social cohesion

The physical safety of the built environment was found to be associated with four dimensions of social cohesion as Table 8.9 shows.

Table 8.9 Evidence of an association between natural surveillance and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	✓	weak	positive
Social networks	x		
Sense of community	✓	fairly weak	positive
Participation in organized activities	x		
Trust and reciprocity	✓	weak	positive
Feelings of safety	x		
Sense of place attachment	✓	very weak	positive

✓ - evidence found
x - no evidence found

8.10.1 Natural surveillance and social interaction

The principal indicator of social cohesion with which natural surveillance of the built environment is associated is social interaction. The indicator measuring this physical aspect of safety of the built environment was found to be positively associated with social interaction, suggesting that as the extent of natural surveillance of the built environment increases, so too does the extent of residents' engaging in social interaction. This corresponds to theory, which suggests that people are more likely to interact with one another if they feel safe in the environment in which such interaction takes place (McIntyre, 1967; Pasaogullari and Doratli, 2004). This indicator, while significantly associated with the dimension of social interaction, was a predictor of interaction, becoming weaker when analysed with intervening variables. This suggests that this indicator of physical safety of the built environment is not as important a predictor of social interaction as are other indicators, but that it is of significance in explaining the variance in this dimension of social cohesion.

8.10.2 Natural surveillance and sense of community

The extent of natural surveillance is found to be positively and weakly associated with sense of community. This finding indicates that in streets where the extent of natural surveillance is greater, respondents are more likely to report a stronger sense of community. This is not however supported by consistent correlations between the variables, and only indirectly by related findings from the interview data which show that the majority of the sample, 89%, agrees that feeling safe in a neighbourhood has a positive effect on their sense of community. The physical indicator of safety is not an important contributor to the prediction of the variance in residents' sense of community, perhaps suggesting that other features are more significant in explanations of the differing degrees of sense of community held by residents.

8.10.3 Natural surveillance and trust and reciprocity/ sense of place attachment

Very weak evidence is found which possibly suggesting an association between the physical indicator of safety of the built environment and that of trust and reciprocity and sense of place attachment. In both cases, the association occurs only once and is not consistently present across the analyses. The apparent associations are both positive, suggesting that the greater the extent of natural surveillance and overlooking in a street, the more likely residents are to indicate higher levels of trust and reciprocity in relation to neighbours and stronger feelings of attachment to the neighbourhood. This is supported, in both cases, by significant positive correlations between the variables, and in the case of feelings of place attachment, indirectly, by the interview data showing that 92% of interviewees indicated that feeling safe in a neighbourhood would have a positive effect on how attached they feel to that neighbourhood. Due to the inconsistency of the associations between these variables, it is concluded that the evidence of associations between the physical safety of the built environment and trust and reciprocity, and the physical safety and sense of place attachment is weak and should be treated with caution. It is however discussed here because of a possible explanation: multiple features of quality of the built environment together can have a significant influence on multiple dimensions of social cohesion. Chapter Nine outlines this potential relationship in more detail.

8.10.4 Summary: natural surveillance and social cohesion

Table 8.9 shows that the findings provide evidence of associations which the extent of natural surveillance in the built environment has with social interaction and also sense of community, and very weak evidence of an association with safety and trust and reciprocity and sense of place attachment. The findings suggest that natural surveillance is a significant predictor of social interaction among residents. It should be noted however, that while these associations are significant, the indicator measuring the extent of natural surveillance contributes, with other indicators, to the prediction of, at most, 37% of the variance in dimensions of social cohesion, and at worst, 18%. It can be argued that the extent of natural surveillance of the built environment is therefore limited in its potential for supporting social cohesion in these six English neighbourhoods.

8.11 Character of the neighbourhood and social cohesion

The data referred to in this section relates to the findings from the semi-structured interviews, conducted with a sample of 102 residents. The breadth of analyses employed here is restricted as the nature of the indicators and the data collected mean that it is not possible to use regression analysis for any, or correlation analysis for all, of the indicators. The indicators measuring the neighbourhood's character were found to be significantly associated with three dimensions of social cohesion (Table 8.10). The associations between character of the neighbourhood and indicators of social cohesion are, on the whole, significant and positive.

Table 8.10 Evidence of an association between character of the neighbourhood and social cohesion

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	×		
Social networks	✓	very weak	positive
Sense of community	✓	medium	positive
Participation in organized activities	×		
Trust and reciprocity	×		
Feelings of safety	×		
Sense of place attachment	✓	medium	positive

✓ - evidence found
× - no evidence found

8.11.1 Character of the neighbourhood and social networks

The findings show a positive correlation between the variable measuring whether residents think their neighbourhood has a character, and two indicators measuring social networks in the neighbourhood. The analysis suggests that there is a positive correlation between the perceived presence of character in a neighbourhood, and whether interviewees socialize in that neighbourhood ($p=0.05$; see Appendix E), indicating that interviewees reporting their neighbourhood as having a character are more likely to report socializing in the neighbourhood. Furthermore, the findings also suggest that interviewees who agree that their neighbourhood has a character tend to report having more friends in the neighbourhood than those who do not agree ($p=0.05$). These correlations are low, indicating that the associations are not particularly strong, despite their significance level. Such findings are not consistent with existing theory and practice; they make no association between the character of the neighbourhood in a neighbourhood and residents' social networks. In addition, the analysis shows a significant correlation between interviewees' description of the character of a neighbourhood and social networks, indicating that interviewees who describe their neighbourhood in terms of its physical form rather than of the population living there also report higher levels of

socializing in the neighbourhood (p=0.05). There is little to suggest that the physical environment has an important part to play in the extent of people socializing with friends or family, and it is perhaps more of an indication, together with the findings relating to social interaction, that the social characteristics of the population are more important for the weaker social ties that residents are more likely to have formed on a more everyday level. In this way, the findings arguably support Henning and Lieberg's supposition that the neighbourhood is an arena where weak social ties flourish but strong social networks are not bound to a particular physical area (1996). They do not, however, provide strong evidence that an association exists between the character of the neighbourhood and social networks in a neighbourhood.

8.11.2 Character of the neighbourhood and sense of community

Stronger correlations were found between the character of the neighbourhood and sense of community in a neighbourhood. Low and significant correlations exist between the variable measuring whether residents think their neighbourhood has a character and all of the indicators measuring sense of community (p=0.05/ 0.01; see Appendix E). In each case the correlation analysis indicates that those interviewees agreeing that their neighbourhood has a character also tend to report positive scores on the indicators measuring sense of community. The interview analysis shows that the majority of the sample (78%) agrees that the character of the neighbourhood has a positive effect on their sense of community. These overall findings of a significant association between character of the neighbourhood and sense of community are not altogether surprising; the importance that this feature of quality of the built environment has on residents' sense of community is commonly highlighted in theory (Relph, 1976; Robbins, 2004), and in recent empirical research (Mannarini *et al.*, 2006). Further analysis shows no correlation between how interviewees describe their neighbourhood (in terms of its physical or social make up) and their sense of community. This might arguably be related to the suggestion by Carmona *et al.* that the character of the neighbourhood is not about one factor, such as the physical fabric, but is rather explained by residents' perceptions of the physical setting, the activities going on there, and their inherent meaning (2003, p. 98; after Relph, 1976). This is discussed in more detail in Chapter Nine.

8.11.3 Character of the neighbourhood and sense of place attachment

The final dimension of social cohesion significantly predicted by the character of the neighbourhood is residents' sense of place attachment. The character of the neighbourhood is found to be consistently associated with the indicators measuring sense

of place attachment across the correlation analyses, which supports the claims that sense of place attachment and one's 'image' of a neighbourhood are closely related (Mannarini *et al.*, 2006). Significant, weak, correlations are found between the interview sample's views on whether or not their neighbourhood has a character and indicators measuring sense of place attachment (p= 0.05; see Appendix E). It seems common sense that these indicators would be associated with one another because they are both based on residents' perceptions of where they live which involve very closely related factors. The way in which residents perceive the neighbourhood in which they live is argued to influence how attached residents feel towards that place (Talen, 1999): these findings support this line of argument.

8.11.4 Summary: character of the neighbourhood and social cohesion

The indicators measuring the character of the neighbourhood are significantly, and to varying degrees, associated with three of the seven dimensions of social cohesion illustrated in Table 8.10. A very weak association was found between the character of the neighbourhood and the extent of social networks, perhaps indicating that weaker social ties are influenced more by the character of the neighbourhood than are stronger, defined social networks. Character of the neighbourhood is found to be most strongly associated with the indicators measuring both sense of community and sense of place attachment. The findings show consistent associations across the statistical analyses, indicating that residents' sense of community and sense of place attachment rise in neighbourhoods with character. No significant associations were found between the character of the neighbourhood and the other dimensions of social cohesion.

This variation in the findings in the strength of association between character of the neighbourhood and dimensions of social cohesion is supported by the interview data which shows that, on average, 51% of interviewees refer to features of quality of the built environment when describing their neighbourhood, while 14% referred to aspects of social cohesion. 21% of the interviewees use features of quality of the built environment to describe the character of their neighbourhood, whereas 33% refer to dimensions of social cohesion; 35% of the interviewees talk about features of quality of the built environment and 14% discuss dimensions of social cohesion when describing what is distinctive about their neighbourhood. Nevertheless, other aspects of the physical environment, such as housing type, topography and location, and social characteristics of the population such as class, household types and the mix of people, are consistently more frequently referred to than either features of quality of the built environment or dimensions of social cohesion. The implications of these findings are discussed in more detail in Chapter Nine.

8.12 Perceived quality of the neighbourhood and social cohesion

This final section relates to the indicators measuring residents' perceptions of the quality of the neighbourhood and the associations these perceptions have with dimensions of social cohesion. The data referred to here relates both to the interview sample as well as to those residents who responded to the household survey. The overall findings are presented in Table 8.11.

Table 8.11 Evidence of an association between a high quality neighbourhood and social cohesion with intervening variables taken into account

Dimension of social cohesion	Evidence	Strength of association	Direction of association
Social interaction	✓	fairly weak	positive
Social networks	✓	fairly weak	positive
Sense of community	✓	fairly strong	positive
Participation in organized activities	×		
Trust and reciprocity	✓	weak-medium	positive
Feelings of safety	✓	fairly strong	positive
Sense of place attachment	✓	fairly strong	positive

✓ - evidence found
× - no evidence found

8.12.1 A high quality neighbourhood and social interaction

The indicator measuring residents' perceptions of the neighbourhood as a place to live is significantly associated with the level of social interaction, suggesting that as their feelings of attachment to the neighbourhood increase, residents tend to report increased positive social interaction with neighbours. This supports the implicit assumption in prescriptive theory that if residents rate their neighbourhood as a good place to live, which might reflect a host of perceptions about the place such as safety and maintenance, as well as attitudes towards other residents, this can have a positive influence on levels of social interaction amongst neighbours (Nash and Christie, 2003). However, this association is not a strong one, and it weakens as more variables are included in the regression analysis. This association is also found in the correlation analysis measuring the relationship between the interviewees' rating of their neighbourhood and social interaction. The analysis shows weak but significant correlations ($p=0.01$; see Appendix E: Table E.9) between residents' neighbourhood rating and the indicators measuring social interaction. However, it should be noted that no correlation was found between this variable and the negative aspects of social interaction, perhaps indicating that not knowing neighbours or choosing to avoid them is influenced more by other features of quality of the built environment, or by non-physical factors.

8.12.2 A high quality neighbourhood and social networks

The evidence in the statistical analyses is that residents' opinions of the neighbourhood as a place to live and the extent of their social networks are very weakly but significantly associated. The findings are that the higher residents rate their neighbourhood as a place to live, the more social networks they are likely to report having in that neighbourhood. These results require examination because they are not replicated in existing theory or practice relating people's opinions of the quality of the built environment to their social networks of friends and family members. While it might be argued that the positive associations might be due to statistical error in the regression analysis, perhaps because of the nature of the variables, correlation analysis also found a positive association between these variables, albeit weak and inconsistent. Overall, it can be said that the findings show a weak association between the perceived quality of a neighbourhood which is largely significant, indicating that as the perceived quality increases, so too does the extent of social networks in the neighbourhood.

8.12.3 A high quality neighbourhood and sense of community

The analyses show that the indicator measuring residents' perceptions of the neighbourhood as a place to live is a consistently strong contributor to the prediction of residents' sense of community in a neighbourhood. The correlation analysis also shows modest and significant associations between these variables (p=0.01; see Appendix E: Table E.9). Furthermore, the indicator measuring residents' rating of a neighbourhood also shows a modest and significant correlation with residents' sense of community (p=0.01). The previous sections in this chapter have outlined the significant association that various features of quality of the built environment have with the sense of community held by residents. These findings relating to the quality of the neighbourhood perceived by residents seems to support this relatively strong association, which is supported by the significant associations which exist between this perceived quality and the indicators measuring the features of quality of the built environment (Appendix E: Table E.13).

8.12.4 A high quality neighbourhood and trust and reciprocity

The regression analysis shows that the perceived quality of the neighbourhood is weakly associated with trust and reciprocity, whereas the correlation analysis of the indicator measuring residents' perceptions of the neighbourhood as a place to live with indicators measuring trust and reciprocity suggests that the association is stronger than this. The findings from the regression analysis take precedence here; they illustrate how a combination of indicators predicts a particular variable, which is more relevant to this

research. However, the analysis also shows modest and significant correlations between the rating of the neighbourhood by residents and the indicators measuring trust and reciprocity. While it is unclear how strong an association there is between these indicators, the findings consistently show that such an association does exist. The implications of these somewhat unexpected results are discussed in the next chapter.

8.12.5 A high quality neighbourhood and feelings of safety

The perceived quality of the neighbourhood has a significant association with residents' feelings of safety. The regression analysis shows that the indicator measuring residents' perceptions of the neighbourhood as a place to live is positively and consistently associated with feelings of safety when intervening variables are also included in the analysis. This is not, however, reflected by any significant correlations between residents' rating of their neighbourhood and feelings of safety. These findings reflect the prescriptive theory which associate perceived safety with the perceived quality of a place, which is in turn attributed, in part, to physical features of the built environment (Pasaogullari and Doratli, 2004; Llewelyn-Davies, 2000; Erkip, 1997). These factors do not do this in isolation, however, and the findings here reflect this in the importance that other intervening variables have when used in conjunction with the features of quality.

8.12.6 A high quality neighbourhood and sense of place attachment

The perceived quality of a neighbourhood is also found significantly associated with residents' sense of place attachment. Consistent and significant associations are found across the regression and correlation analyses, indicating that the more highly residents rate their neighbourhood, the more attached they are likely to report feeling. The interview data also show that a high proportion of the sample agree throughout the variety of questions that specific features of quality of the built environment support dimensions of social cohesion, which is supported in turn by the significant correlations between the indicators measuring quality. These findings support theory claiming that residents feel attached to a place when they feel it is of high quality and is a 'decent place to live' (Nash and Christie, 2003, p. 17).

8.12.7 Summary: a high quality neighbourhood and social cohesion

Table 8.11 shows a summary of the associations found between the perceived quality of a neighbourhood and indicators of social cohesion. Associations found between the variables measuring perceived quality and social interaction are weak and significant. Very weak associations are found between perceived quality of the neighbourhood and

social networks, indicating that other, non-physical indicators might better predict them. The perceived quality of the neighbourhood is much more strongly associated with the sense of community, as is the sense of place attachment which supports existing theory and practice. No associations are found between perceived neighbourhood quality and participation in organized activities whereas trust and reciprocity are found to be associated, to varying degrees, with residents' perceptions of neighbourhood quality. Finally, the perceived quality of the neighbourhood is found to be significantly associated with feelings of safety.

A final question was asked of the interview sample: how likely do they think living in a high quality neighbourhood makes residents more or less likely to get on well with one another? This question is not employed as an overall indicator of how features of quality of the built environment relate to social cohesion, as it relates only to a part of the latter concept. Despite this limitation, the results are of interest. Over 72% of the sample agrees that living in a high quality neighbourhood makes residents more likely to get on with one another, whereas just fewer than 20% state that it has no effect. The rest of the sample responded that they didn't know (5%), or that it depends (4%). Despite being an essentially closed question, a number of interviewees expanded on their responses. Of these interviewees (22% of the interview sample), 9% responded that it would have a positive effect, with certain caveats, and 23% indicated that the quality of the neighbourhood is not the only factor, with a further 23% responding that residents are more important in creating a high quality neighbourhood.

8.13 Features of high quality in the built environment most likely to support social cohesion in its neighbourhoods

In order to be useful for policy and practice, those features of high quality in the built environment which are most likely to support social cohesion in English neighbourhoods need to be identified. The nature of the indicators and the breadth of data mean that it is impossible to aggregate them into overall indicators of quality of the built environment on the one hand, and social cohesion on the other. However, there are some clear indications that particular features of quality of the built environment have the potential to support social cohesion in English neighbourhoods. This section presents the overall findings of the research in a number of tables and figures. Firstly, Table 8.12 shows the potential effects of features of quality of the built environment on dimensions of social cohesion. This table shows that the influence of the quality of the built environment depends on the specific feature examined and the nature varies accordingly. Overall, the

findings show that no single feature of quality of the built environment is significantly associated with all seven dimensions of social cohesion while several features have a significant effect on more than half of the dimensions of social cohesion. There is no, or inconclusive, evidence that accessibility to open space, the connectedness and permeability of the neighbourhood and the extent of greenery have associations with dimensions of social cohesion. Table 8.13 shows the same information as an aggregation of the number of dimensions of social cohesion which each feature of quality of the built environment is found to be significantly associated with, and the nature of that association.

While it was not possible to aggregate the findings in this research to produce one overall measure of quality of the built environment, there is consistent evidence to suggest that features of quality of the built environment, on the whole, do positively contribute to **residents' sense of community, feelings of trust and reciprocity, feelings of safety,** and **sense of place attachment**. Table 8.14 shows the findings in more detail by presenting the strength of the associations found between the indicators of quality of the built environment and social cohesion. The positive and negative associations are highlighted in different colours (blue and grey respectively).

This table shows that, for example, even though the research also suggests that the features of quality of the built environment on the whole also contribute to social interaction, the nature of the association is not consistently positive, nor is it clear. It is apparent from Table 8.14 that the following features of quality of the built environment are significantly associated with a number of dimensions of social cohesion: the **attractiveness** and the level of **maintenance** of the built environment, the **extent of natural surveillance** in the built environment, the **character of the neighbourhood** and **residents' perceptions of the quality of the neighbourhood**. All five features have a significant association with residents' perceived sense of community, and feelings of place attachment, while four are significantly associated with feelings of safety and feelings of trust and reciprocity, and three with social interaction. Social interaction is the dimension of social cohesion which has the most common association with features of quality and is associated with six of the features: four of these features (accessibility, maintenance, safety and perceived quality) are positively associated with social interaction, while two (density and, to a lesser extent, legibility) are negatively associated. Participation in organized activities is the dimension of social cohesion which has the smallest number of significant associations with features of quality of the built environment: it is associated, very weakly, with the indicator measuring inclusiveness.

Table 8.12 Potential effects of features of quality of the built environment on social cohesion

A higher level in the neighbourhood of...	Potential effect on social cohesion
residential density	Increase in the number of respondents reporting negative social interaction Decrease in the number of respondents reporting feelings of trust and reciprocity (very weak association)
the extent of mixed use development	No conclusive evidence of an effect on any participation in organized activities Increase in the number of respondents reporting feelings of safety
accessibility to public transport	Increase in the number of respondents reporting positive social interaction
accessibility to open space	No effect on any dimension of social cohesion
connectedness and permeability	No effect on any dimension of social cohesion
legibility	Increase in the number of respondents reporting negative social interaction (very weak association) No conclusive evidence of an effect on feelings of trust and reciprocity
perceived attractiveness	Increase in the number of respondents reporting a sense of community Increase in the number of respondents reporting feelings of safety Increase in the number of respondents reporting a sense of place attachment
attractiveness – the extent of greenery	No conclusive evidence of an effect on any dimension of social cohesion
inclusiveness	Increase in the number of respondents reporting participation in sports groups (very weak association) Increase in the number of respondents reporting feelings of trust and reciprocity (very weak association)
maintenance	Increase in the number of respondents reporting positive social interaction Increase in the number of respondents reporting a sense of community Increase in the number of respondents reporting feelings of trust and reciprocity Increase in the number of respondents reporting feelings of safety Increase in number of respondents reporting a sense of place attachment
natural surveillance	Increase in the number of respondents reporting positive social interaction Increase in the number of respondents reporting a sense of community Increase in the number of respondents reporting feelings of trust and reciprocity Increase in the number of respondents reporting a sense of place attachment (very weak association)
character of the neighbourhood	Increase in the number of respondents reporting a sense of community Increase in the number of respondents reporting a sense of place attachment
perceived quality (on the part of the resident)	Increase in the number of respondents reporting positive social interaction Increase in the number of respondents reporting social networks Increase in the number of respondents reporting a sense of community Increase in the number of respondents reporting feelings of trust and reciprocity Increase in the number of respondents reporting feelings of safety Increase in the number of respondents reporting a sense of place attachment

Table 8.13 Number of dimensions of social cohesion significantly associated with features of quality of the built environment

Feature of quality of the built environment	Number of dimensions of social cohesion	Dimension	Positive or negative association?
High residential density	2	Social interaction	–
		Feelings of trust and reciprocity (v.w)	–
Mixed land uses	1	Feelings of safety (w)	+
Accessibility	1	Social interaction (w)	+
Connectedness and permeability	0		
Legibility	1	Social interaction (v.w)	–
Attractiveness (perceived)	3	Sense of community	+
		Feelings of safety (w)	+
		Sense of place attachment	+
Inclusiveness	2	Participation in organized activities (v.w)	+
		Feelings of trust and reciprocity (v.w)	+
Maintenance	5	Social interaction (w)	+
		Sense of community	+
		Feelings of trust and reciprocity	+
		Feelings of safety (w)	+
		Sense of place attachment	+
Natural surveillance	4	Social interaction (w)	+
		Sense of community (w)	+
		Feelings of trust and reciprocity (w)	+
		Sense of place attachment (v.w)	+
Character of the neighbourhood	3	Social networks (v.w)	+
		Sense of community	+
		Sense of place attachment	+
Perceived quality	6	Social interaction	+
		Social networks	+
		Sense of community	+
		Feelings of trust and reciprocity	+
		Feelings of safety	+
		Sense of place attachment	+

w = weak association
v.w = very weak association

Table 8.14 shows that features of quality of the built environment do have a significant part to play in explaining the variance in the dimensions of social cohesion in these six neighbourhoods, to varying degrees. The connectedness and permeability of the built environment have no association with the indicators of social cohesion, while the density, accessibility, inclusiveness and legibility of, and the extent of mixed land uses in, the built environment have significant associations with no more than two dimensions of social cohesion.

Table 8.14 Significant associations between features of quality of the built environment and dimensions of social cohesion

Feature of quality of the built environment	Dimension of social cohesion: Social interaction	Social networks	Sense of community	P'cipation in org'zed activities	Trust and reciprocity	Feelings of safety	Sense of place attachment
High residential density	weak				very weak		
Mixed land uses				inconc.		weak	
Accessibility	weak						
Connectedness & perm'y							
Legibility	very weak				inconc.		
Attractiveness			medium			weak	medium
Inclusiveness				very weak[1]	very weak		
Maintenance	weak		fairly weak		fairly weak	weak	fairly weak
Natural surveillance	weak		weak		weak		very weak
Character		very weak	medium				medium
Perceived quality	fairly weak	fairly weak	fairly strong		weak-medium	fairly strong	fairly strong

association is positive
association is negative
evidence exists but is inconclusive

[1] sports groups only

The indicators measuring the attractiveness, level of maintenance, extent of natural surveillance, character and perceived quality are significantly associated with three or more dimensions of social cohesion. While the analysis therefore shows that that the indicators measuring quality of the built environment explain differences in individual dimensions of social cohesion, they do not do it alone. The findings presented in Chapter Seven shows that intervening variables are also significantly associated with dimensions of social cohesion, and, throughout the regression analyses, they contribute to an increase in the prediction of the variation in the dimensions of social cohesion.

8.14 Conclusions

The research findings presented in this chapter show that there is a number of features of quality of the built environment which are significantly associated with dimensions of social cohesion. According to the analyses, residents' perceptions of quality of the built environment form the feature (or element) of quality of the built environment most consistently associated with dimensions of social cohesion. The findings show that, unsurprisingly, this association tends to be strongest with dimensions of social cohesion which are *also* dependent on the perceptions of residents. The level of maintenance of the built environment is also consistently associated with dimensions of social cohesion, as, to a lesser extent, is the level of natural surveillance in the neighbourhood. In addition, the

attractiveness and the character of the neighbourhood have significant associations with social cohesion, but with fewer dimensions. The implications of these empirical findings for theory and policy are examined in the next chapter.

Chapter Nine

Supporting Social Cohesion in Neighbourhoods Through High Quality Built Environments

Chapter Nine – Supporting Social Cohesion in Neighbourhoods Through High Quality Built Environments

9.1 Introduction: the contribution to knowledge

It is argued in theory, policy and practice that high quality built environments have a positive effect on social cohesion in neighbourhoods. Mulgan *et al.* describe the social benefits of 'good public spaces' as feelings of safety on the part of individuals, social capital, that is, mutual trust, sense of community and shared norms and values, social inclusion and community cohesion 'where ethnically and culturally diverse groups can co-exist peacefully' (2006, p. 28). Carmona *et al.* state that a well designed built environment can add 'social value' through an increased sense of safety, a boost in civic pride and 'a reinforced sense of place' (2001, p. 29). This research goes some way to providing empirical evidence which tests such claims through the quantitative and qualitative methods of data collection and analysis employed.

This research forms part of a large tradition of theoretical and, to a lesser extent, empirical investigation which examines the tenets of environmental determinism in a pragmatic and cautious way (Williams *et al.*, 2000a; Burton, 1997; Ellen and Turner, 1997; Gehl, 2001; Carmona *et al.*, 2003; Jenks *et al.*, 1996). It questions the validity of claims that the physical environment directly influences social behaviour and activity, and highlights the important contribution made by intervening (or influencing) and unknown factors. This research therefore does not deny the effect that the built environment might have on social activity, but rather it establishes the relationships that the quality, as one aspect of the built environment, has with social cohesion in the six neighbourhoods under scrutiny. This new knowledge seems to support existing theory, practice and policy to some extent, but refutes it elsewhere; it anticipates future directions in research by providing empirical evidence which shows the nature and extent of the associations between certain physical and social environments and indicating where such associations cannot be identified and explained.

Previous empirical research does not reflect the breadth of the concept of quality or the large number of features that are claimed to make up high quality built environments. This research attempts to redress this by providing a broad definition of high quality in the built environment through identification of specific features which are meaningful at the neighbourhood scale, and operationalizes them as a number of indicators at different scales. In the same way, existing empirical research into social cohesion does not define high quality consistently at a particular scale, or adequately encapsulate the number of

antecedent dimensions which are argued to constitute the concept. This research makes a contribution to sociological theory and research by examining the concept and providing a definition which is applicable at the neighbourhood scale while acknowledging its multi-faceted nature. Furthermore, it provides a number of indicators which express the abstract concept of quality in operational terms and measure the individual dimensions of social cohesion. Both sets of indicators, which employ quantitative and qualitative methods of data collection and analysis, will be of use in urban design research and practice, as well as in research, practice and policy relating to urban regeneration and sustainable communities and neighbourhoods which focus on improving the quality of the built environment and the quality of people's lives (Office of the Deputy Prime Minister [ODPM], 2002).

The multi-method approach employed in the research is one that could be applied to measure the quality of the built environment of neighbourhoods and its associations in other countries with social cohesion. It is an adaptable approach which could incorporate local conditions which might include distinct, localized definitions of neighbourhood. The research approach, including the innovative neighbourhood delineation method, therefore provides a useful methodological model which might be used in further research.

As well as contributing to theoretical debates on quality of the built environment and social cohesion and providing an adaptable methodological model, the research also provides findings which have implications for policy and practice in the UK. Evidence provided by the research suggests that features of quality of the built environment may contribute positively to social cohesion. However, to avoid any misinterpretation, this statement needs to be qualified by the findings relating to the individual features of quality of the built environment, and the associations found to occur (or not) with individual dimensions of social cohesion. Due to the nature of the indicators and, in the case of the quality of the built environment, inclusion of a wide spectrum of features, it is not possible to aggregate the findings to provide an analysis of the two 'headline' concepts overall. Nevertheless, inferences can be made with regard to the potential of each feature of quality of the built environment to support individual dimensions of social cohesion. The implications of these inferences are discussed in Section 9.3; the next section discusses the limitations of the research.

9.2 Limitations of the research

Although many of the findings presented in Chapters Seven and Eight are significant, there are several reasons why caution should be exercised in interpreting these results. Generalizations are made on the basis of a small number of neighbourhoods which are

located in two English cities. It could be argued that there are limitations associated with the specific case studies selected, especially as there was no process within the research to ensure that there was a broad variety of 'scores' on the different quality of the built environment indicators. This is a drawback of the study's site selection outcome, rather than of the process of selection per se, which was designed to be applicable to any physically defined neighbourhood. Selecting neighbourhoods according to their features of quality would have involved a lengthy pre-selection exercise and may have skewed the sample bias in favour of the relationship under scrutiny (after Leamer, 1983; Hurlbert, 1984). Having said this, a research design which incorporated a larger number of neighbourhoods with different 'degrees' of quality (and 'control' neighbourhoods) would have been advantageous, but impossible to achieve within the time and resources available. Furthermore, care should be taken in applying the findings of this thesis to other cities (in England, the UK and beyond) without taking into account, for example, cultural differences.

In addition to this, the clustered selection process of the sample (i.e. the sample of residents in six particular neighbourhoods) also created difficulties. Underlying the selection of the study sites and the sample was the need to capture both physical and non-physical data relating to neighbourhoods and residents' perceptions of, and attitudes towards, them. The variation that might occur *between* the different neighbourhoods (in terms of their features of quality and the extent of social cohesion) is not accounted for; and neither is any variation that might occur *within* them. Arguably this was further exacerbated by the decision to examine the relationship between quality of the built environment and social cohesion across the total sample, rather than through an examination of variations which might exist between the samples in the six neighbourhoods. The aim of the research was not to compare the quality of the built environment between six particular neighbourhoods and then assess its association with social cohesion. It was rather to situate the data collection within a number of physically defined neighbourhoods and analyze the data for the sample as a whole. It is clear that there are advantages and disadvantages to both methods, but, in hindsight, it may have been valuable to conduct an analysis combining both types of analysis. One way that this could have been done was by using multilevel analysis (Snijders and Bosker, 1999; Li *et al.*, 2005). This form of analysis focuses on 'nested sources of variability' and is applicable to the random two-stage sample approach used in this research (Snijders and Bosker, 1999, p. 1), where, firstly, neighbourhoods and, secondly, the sample within them were selected. This type of analysis would also have been able to deal with the variability in scale of the indicators (neighbourhood/ street/ household/ individual) more adequately than the research analysis employed. While the operationalization of the indicators is

meaningful at neighbourhood level, some of the data was collected at a finer scale (outlined in Chapter Five). This meant that the associations under scrutiny were examined, at times, at the neighbourhood level alone, therefore in only six different cases. This arguably led to a loss of clarity due to the amalgamation of results. Multilevel analysis is increasing in popularity in social sciences and study of the built environment, and particularly in epidemiological research (Oakes, 1994; Fisher and Li, 2004; Li *et al.*, 2005). Like other forms of statistical analysis, it is however subject to certain assumptions. Specifically, multilevel analysis may not be wholly appropriate for this research as the 'ideal' number of groups (here, neighbourhoods) for such analysis is at least one hundred (Hox and Maas, 2001; Fisher and Li, 2004). Having said this, some way of controlling or accounting for the inherent differences between the neighbourhoods might have strengthened the research and contributed to a fuller understanding of the associations with, and influences on, social cohesion in neighbourhoods. This would explore the claims in theoretical and empirical accounts that neighbourhoods are broad contexts made up of 'combinations of attributes of the environment and the people living there' (Blackman, 2006, p. 22; Oakes, 1994); as many of such attributes as possible should be taken into account when a neighbourhood is under scrutiny.

A further limitation of this research relates to the statistical analyses conducted. The features of quality of the built environment were effectively reduced to a number of independent variables whose influence on each other could not be taken into account in the analysis. The nature of this analysis ruled out the inclusion of any inter-relationships or inter-correlations between the independent variables, and therefore the influence of such relationships was not accounted for. The possibility that social cohesion might be better predicted by, or more strongly associated with, combinations of attributes in a neighbourhood, could not be examined or tested by the series of isolated indicators and the accompanying regression analysis (Cornfield, 1978, cited in Oakes, 1994).

In light of these limitations, relating not only to the nature of the analysis but also to the types of variable used to measure the concepts, there might be difficulties in translating the indicators into meaningful practical design and planning guidelines. For example, while there are examples of qualitative (and subjective) measures of neighbourhoods incorporated into assessment criteria (Llewelyn-Davies, 2000; Commission for Architecture and the Built Environment [CABE] and Department of the Environment Transport and the Regions [DETR], 2000), the robustness of such indicators can be called into question if they are used to inform policy and practice. It should therefore be noted that some of the results are suggestive (in particular those arising from data collected at the neighbourhood level) and should be seen as tentative in the case of operationalization of indicators at different scales, and subsequent explanations of variance.

The features which this thesis used to comprise the definition of a high quality built environment do not constitute an exhaustive list. In Chapter Two, a number of features which could not be included because they were outside the scope of the research are discussed. The nature of the indicators also posed a further difficulty; it was impossible to aggregate them at any scale to establish an overall assessment of both the quality of the built environment or social cohesion. While such an aggregation might seem to be a useful overall indicator on the face of it, the variety and incongruousness of the indicators would have made such an exercise difficult to justify. It was in practice not appropriate to aggregate indicators measuring, for example, the attractiveness of the built environment or those measuring levels of participation in organized activities. It would arguably have added little to the research if overall scores for these concepts, quality and social cohesion, were created, especially in light of the findings reporting individual features of quality and dimensions of social cohesion.

Other methods employed in the research also have their strengths and their weaknesses. The neighbourhood delineation process is based on a new methodology developed for this research (Jenks and Dempsey, 2007) . This is both a strength, because there was a need for a method of neighbourhood delineation to be developed which took into account residents' perceptions of neighbourhood boundaries, and a weakness, because it is not a tried and tested method. It is possible that this method of selecting neighbourhoods will be used in the future, especially where there is a need to ensure that physical and perceived neighbourhood boundaries correspond (Martin, 1998). The questionnaire survey was administered by post, a method that can yield poor response rates. However, a good average response rate (42%) was achieved; this is as high a rate as drop-and-collect questionnaires can yield (Pole and Lampard, 2002). There are also limitations in using the telephone for conducting interviews. Nevertheless, the combination of open and closed questions meant that mail was a reliable and easily administered method of collecting the data (Bryman, 2001).

9.3 Implications of the findings for policy and practice

The findings from this research are relevant to urban policy and practice in a range of areas. They relate, to varying degrees, to urban design and neighbourhood renewal policy, as well as to planning, transport and housing policy. The impact that the findings have is therefore broad. The following sections attempt to prioritize how social cohesion might be achieved through policy makers and practitioners attending to features of quality of the built environment. The implications of the findings for specific policy directions adopted by the current government are outlined, and empirical evidence is referred to

which tests the claims made by a host of practitioners including policy-makers, urban designers, local planning authorities, local authority service providers and, to a lesser extent, the police.

9.3.1 Attractive neighbourhoods

The attractiveness of the built environment is consistently cited in urban planning policy, urban design guidance and practice as an important feature of quality, which has the potential to contribute to the support of socially cohesive behaviour. The social benefits of attractive urban environments have largely been described in relatively abstract terms and said to include making a contribution to quality of life, liveability, community sustainability, feelings of security and local pride (ODPM, 2002; 2005c; Burton and Mitchell, 2006; CABE and HBF, 2000; English Partnerships, 1998), The findings of this research provide empirical evidence which suggests that increasing residents' perceptions of the attractiveness of the neighbourhood can contribute in some way to social cohesion in that neighbourhood. Attractiveness of the built environment is shown to have significant positive associations with three dimensions of social cohesion: most significantly, **sense of place attachment** and **sense of community**, and to a lesser extent, **feelings of safety**. The positive association that attractiveness has with these dimensions of social cohesion broadly supports the claims made by urban designers, planners and policy-makers that attractive neighbourhoods can support socially cohesive behaviour and activity.

The research can offer limited guidance about how an attractive neighbourhood might be provided. While attractiveness is a concept oft-cited as a feature of quality in the built environment, there has been no consensus on how it should be operationalized, especially in the light of its subjective nature. The attempt in this research to provide objective indicators to measure attractiveness, assesses one very specific aspect of a neighbourhood, namely, the extent of greenery. This methodological difficulty was discussed in Chapter Five (Section 5.1.6), but the use of multiple indicators to measure other features of the quality of attractiveness of the built environment does call into question the focus on greenery rather than on other aspects of the built environment; doubt, therefore, might also be cast on the validity and reliability of using this objective indicator by itself.

While the extent of greenery and trees in a neighbourhood was not found to contribute positively to social cohesion in the six neighbourhoods examined, it cannot be discounted altogether simply because other indicators were found to contribute to such cohesion more consistently. It seems likely that the extent of greenery in a neighbourhood might

contribute to a resident's perception of the attractiveness of that neighbourhood. However, it may be that the findings indicate that other forms of attractiveness in the built environment are more significant. Attractiveness can arguably be achieved through decoration and ornamentation, public art and the personalization of individual properties (Bentley *et al.*, 1985; Moughtin *et al.*, 1999; CABE and HBF, 2005). These aspects may differ from neighbourhood to neighbourhood and were not examined here because theory, policy and practice do not suggest that such facets of the built environment have an influence on social cohesion. However, they may have a direct influence on the formation of residents' perceptions of attractiveness. Further research is therefore needed to understand attractiveness fully as a multi-faceted feature of quality of the built environment, and the associations which a more broadly-defined concept might have with dimensions of social cohesion.

9.3.2 Well-maintained neighbourhoods

One of the indicators measuring the level of maintenance of the built environment, specifically the quantity of litter, is based on cleanliness standards used by ENCAMS (2006), and also the basis of indicators adopted by the Department for Communities and Local Government (DCLG, previously ODPM) in Public Service Agreement Target 8 (ODPM, 2005b; 2005c). The indicator measuring the condition of pavements was established in the *Highway Maintenance Handbook* (Atkinson, 1997). This harmonization of indicator use suggests that direct recommendations can be made about policy relating to maintenance of the built environment. There is widespread agreement in urban design policy and (local authority) practice on the advantages of well-maintained built environments for positive social activity (CABE Space, 2005b; Department for Environment Food and Rural Affairs [Defra], 2005). This research supports these claims to varying degrees. The maintenance of the built environment is found to be positively associated with **social interaction, sense of community, trust and reciprocity, feelings of safety** and **sense of place attachment**. The extent of this positive association is not consistent across the dimensions of social cohesion, suggesting that the maintenance of the built environment has stronger associations with some social activity than do others. A significant association was found with sense of place attachment, supporting the claim that residents feel more committed to a place if it is cared for (CABE Space, 2005b; Nash and Christie, 2003).

Policy advocating a high level of maintenance in the built environment also claims that this promotes an increase in perceived sense of community (Baxter and Associates, 1998; ODPM, 2002). This is closely related to the 'broken window syndrome' in that it associates

cleanliness and the overall condition of a neighbourhood with people's feelings of attachment to other people who live there. The research supports this claim but the association is fairly weak, indicating that other influences on residents' sense of community are stronger than the level of maintenance of the built environment.

The research also found a weak association between maintenance of the built environment and feelings of safety. This relates again to the 'broken window syndrome', adopted in policy and practice, which asserts that people feel safer if a place is visibly maintained (Cheetham, 1994; CABE Space, 2005a; Department of the Environment [DoE] and Department of Transport [DoT], 1992; ODPM, 2003a). However, the weak association found in this research between the two indicators arguably does not reflect the claims made in neighbourhood renewal policy and urban design policy and practice of a strong causal effect between poorly maintained places and feelings of insecurity. The findings support such policy and practice, but only to a certain extent. This perhaps suggests that, for this sample of English residents in these six neighbourhoods, other factors are more important in predicting feelings of safety than the level of maintenance of the built environment. This is reflected in the number of additional features of quality of the built environment and intervening variables with which feelings of safety are significantly associated. Having said this, together these indicators account for no more than a quarter of the variance in residents' feelings of safety. This suggests that other indicators not included in the research might be more successful predictors. Therefore further research is necessary to clarify what these other predictors of feelings of safety in the neighbourhood might be.

To a lesser extent, the maintenance of the built environment was found to have a significant association with social interaction. To some degree, this supports the claim made in policy that a poorly-maintained space curtails the use of that space by certain members of the neighbourhood, restricting the level of social interaction that can take place there (Baxter and Associates, 1998; CABE Space, 2005b; Carmona *et al.*, 2004; Parkinson *et al.*, 2006a). The strength of this association was found to be significant but weak, indicating that maintenance of the built environment has a limited effect on the level of social interaction in a neighbourhood compared with other indicators which have a stronger influence.

Overall, it can be said that the research largely supports claims in policy and practice that a well-maintained built environment has a positive effect on dimensions of social cohesion. The findings do not suggest that the level of maintenance of the built environment has a strong association with social cohesion, but they do show that it might contribute significantly to the prediction of social cohesion. Policies which recommend

well-maintained neighbourhoods as a means of supporting positive social activity are therefore shown to be valid and meaningful.

9.3.3 Neighbourhoods with character

Policy and practice consistently cite the importance of the character of a neighbourhood (Llewelyn-Davies, 2000; DETR, 2000a; CABE and HBF, 2005; Aldous, 1992; Barton *et al.*, 2003). The character of a place is argued to contribute to the social cohesion of an area: for example, 'big, bland spaces...fail to offer the same opportunities for social cohesion as more personal spaces' (CABE Space, 2005b, p. 38). The summary of findings in Table 9.3 shows that a neighbourhood's character has a varied degree of association with individual dimensions of social cohesion. The analysis shows that there is a positive association between the perceived character of a neighbourhood and sense of community, sense of place attachment and, to a much smaller extent, social networks.

This, in part, supports urban design and planning policy and practice which claim that character in a neighbourhood contributes to the perceived sense of place attachment on the part of residents; and, arguably as an extension of this, the sense of community in a neighbourhood. The findings suggest that the stronger the **character of** ~~sense of place in~~ a neighbourhood, the stronger the sense of place attachment and the sense of community.

Theoretical claims made by new urbanist theorists have been criticized for suggesting that a sense of community can be created in a neighbourhood through urban design (Talen, 1999; Carmona *et al.*, 2003; English Partnerships, 1998; Pasaogullari and Doratli, 2004). Some consider that to suggest that behaviour can be determined by the physical environment is an outdated form of environmental (or spatial) determinism (Talen, 1999; Carmona *et al.*, 2003). This research neither confirms nor refutes this claim, but it does suggest that certain features of the built environment are positively associated with residents' sense of community, indicating that without them the sense of community can be reduced.

It is often claimed that 'character' in a neighbourhood can be created through the built environment (Buchanan, 1988; CABE and DETR, 2000; English Partnerships, 1998; English Partnerships and Urban Villages Forum, 1998). As Chapter Two indicates, there is little consensus in urban design and planning theory, practice or policy on how to define the character or sense of place of a neighbourhood; however, it is clear from policy and accounts of prescriptive theory that a neighbourhood's character is considered to be localized and specific to the urban setting under discussion (Carmona *et al.*, 2003; CABE and DETR, 2000; ODPM, 2005a). Public space quality audit tools, such as those

proposed by Carmona *et al.* (2004) and Placecheck, developed by the Urban Design Group (no date; Cowan, 1997), require assessments of urban settings which make 'the most of their character' (Carmona *et al.*, 2004, p. 129). To avoid vagueness and to ensure an accurate assessment of the character of a place, this research bases its indicators on the opinions of the residents, arguably the most effective method of determining these features. One justification for this is that the findings suggest that the character of a neighbourhood is not dependent on the built environment alone. Section 6.4.9 suggests that residents refer to characteristics of other residents and dimensions of social cohesion as well as to features of the built environment when describing and assessing the character of their neighbourhood. For these reasons, policy and practice which claim that a sense of place **or character** can be designed or created through the built environment alone are arguably misleading and inaccurate.

9.3.4 'Safer, cleaner, greener' neighbourhoods

While this research provides findings which relate to individual features of quality of the built environment and dimensions of social cohesion, it is also possible to apply them to policy and practice which incorporate more than one feature of quality. The government, in its 'long-term programme of action for delivering sustainable communities in both urban and rural areas', incorporates a number of features of quality of the built environment and dimensions of social cohesion in its definition of 'sustainable communities' (ODPM, 2005a). Within the remit of the 'sustainable communities' plan, cross-cutting policy across six government departments has been established to improve the quality of open spaces because of the contribution this makes to 'living, sustainable...communities' (ODPM,2002, p. 5). This policy focuses on the social benefits of streets and public spaces which are safer, [healthier], more attractive and better maintained than those which are not, and that also have access to high-quality parks and green spaces (ibid., p. 17). Such benefits include increased positive social interaction and increased feelings of safety and pride which contribute to 'successful and cohesive communities' (ibid., p. 12).

The factor analysis of this research suggests that there is some association between indicators measuring level of **maintenance**, perceived **attractiveness**, residents' **feelings of safety**, **sense of community** and **sense of place attachment** (see Section 7.8.3 for further detail). Furthermore, the regression analyses (reported in Sections 7.4.1 and 7.8.1) show that, together, the indicators measuring physical safety (through the extent of natural surveillance), level of maintenance and attractiveness of the built environment contributed to the prediction of indicators measuring sense of community, and to a lesser extent, sense of place attachment, while two of the indicators (shown in Figures 8.1 and 8.6) are

found to be associated with social interaction (safety and maintenance) and feelings of safety (maintenance and residents' perceived attractiveness). The research supports the inclusion of these concepts in neighbourhood-level policy, and provides evidence suggesting that the link between the quality of the built environment and these dimensions of social cohesion should be made more explicit in policy and practice.

However, while no indication was found in this research that the extent of greenery has a significant association on dimensions of social cohesion, it is not possible to comment on the association that the quality of the parks and open spaces may have with any of the dimensions of social cohesion. While data were collected relating to the level of maintenance of the pedestrian routes within the open spaces in the study sites (and the 400m buffer zones), the assessment of the overall quality of open spaces was outside the scope of the research. Further research is therefore required to ascertain the association that this quality might have with dimensions of social cohesion, and to comment on its possible implications for the cross-cutting national policy.

9.3.5 Accessible, connected and legible neighbourhoods

It is also the case that the accessibility and connectedness of the neighbourhood are included within the definition of 'sustainable communities' adopted in urban policy and therefore are said, if not to contribute to social cohesion, then at least to support socially cohesive activity (ODPM, 2002; 2005a; Burton and Mitchell, 2006). The findings from this research indicate that accessibility has a positive though weak association with social interaction which does, in some way, support prescriptive theory which suggests that increased accessibility in a neighbourhood can improve opportunities for people to socially interact (after Barton *et al.*, 2003).

Claims are also made in policy and practice suggesting that the connectedness of the built environment can also contribute to increased social interaction (Bentley *et al.*, 1985; CABE and DETR, 2000; Urban Task Force, 1999). Closely related to this are claims that a legible built environment encompasses elements of the built environment other than landmarks and nodes, including accessibility, connectedness and features of inclusiveness (such as street furniture and bus stops [also see Section 5.1.5]) (Barton *et al.*, 2003; Hazel and Parry, 2004; Burton and Mitchell, 2006) and supports social interaction. While the indicator of legibility (measuring landmarks and nodes) used in this research was very weakly but significantly associated with social interaction, the findings show that, statistically, there is no association between these other associated features of legibility (accessibility, connectedness and features of inclusiveness) of a neighbourhood and social interaction. This casts doubt on such claims as it is not explicitly demonstrated

in theory or practice that legible built environments, as defined more narrowly for the purposes of this research, have any social benefits.

However, qualitative data collected suggests that the majority of the interview sample of residents felt that a legible, well-connected neighbourhood which is easy to walk around would have a positive effect on a number of dimensions of social cohesion, including social interaction and feelings of place attachment.

Having said this, the overall findings, and the nature of the indicators used in the interviews, make it difficult to conclude that there is a meaningful association between connectedness and permeability of the neighbourhood and dimensions of social cohesion in these six neighbourhoods (see Section 8.5). The research does not therefore support claims of a positive relationship between the broader definition of a legible, connected and permeable neighbourhood and social interaction; it does suggest other more significant influences on the dimension of social cohesion.

9.3.6 High density, mixed use neighbourhoods

Government policy advises local planning authorities to promote mixed use development and to avoid housing developments of less than thirty dwellings per hectare (DETR, 2000b, paragraphs 46 and 58). There is no consensus on the social benefits of high density, mixed use neighbourhoods, but they are said to include an increase in opportunities for social interaction, increased feelings of safety and a sense of community (Calthorpe, 1993; Talen, 1999; Urban Task Force, 1999; Jenks *et al.*, 1996; Lau *et al.*, 2005; Frey, 1999; Williams, 2000). Other theories and research question such claims, arguing that high residential density can lead to a decrease in social interaction and an increase in social disintegration (the polar opposite of the former) due to crowding, as well as a reduction in sense of community, social networks and feelings of safety (Churchman, 1999; Raman, 2005; Turok *et al.*, 2003; Williams, 2000). On the other hand, urban planning policy guidance also commonly states that a high density, mixed use neighbourhood can be socially cohesive, without making an explicit causal link between the physical and the social (CABE and DETR, 2000; DETR, 2001; Urban Task Force, 1999). Findings from this research suggest that the density and extent of mixed use development in neighbourhoods do not have a strong significant association with individual dimensions of social cohesion. The associations found were weak or inconclusive. While this calls into question the claims that high density and mixed land uses contribute to social cohesion in neighbourhoods, it does not refute claims that such neighbourhoods can also be cohesive. The evidence simply suggests that this was not the case in the six neighbourhoods examined. Neighbourhoods with a wider spectrum of

residential densities and a variety of land uses should be selected to examine this relationship further, because there was arguably not enough variety in the residential density of the neighbourhoods examined.

9.3.7 The stable community

The research also provides findings relating to intervening variables which may have implications for policy and practice. The research shows that residents who are planning to move house in the next few years are, on the whole, less likely to engage in socially cohesive activity. This supports existing research which suggests that the higher the population turnover, the lower the attachment to, and the sense of community and social interaction in, the neighbourhood (Silburn *et al.*, 1999; Forrest and Kearns, 1999; Hirschfield and Bowers, 1997). A stable community, in terms of low residential turnover, is implicit in the policy definition of 'sustainable communities' (ODPM, 2005c). This research supports claims that community stability contributes positively to socially cohesive activity, but only to a certain extent. The findings do not show a consistently significant association between respondents' length of residence and dimensions of social cohesion; however, length of stay was positively associated with sense of place attachment, which supports existing research (Bonaiuto *et al.*, 1999). This suggests that residents, on the whole, engage (or not) in socially cohesive activity, regardless of how long they have been living in a neighbourhood.

9.3.8 The multi-dimensional nature of quality

It is clear that no one feature of quality of the built environment is a very strong predictor of any one (or more) dimension(s) of social cohesion. Rather a combination of features of quality together explains the variation in a dimension of social cohesion to differing degrees. This is illustrated well in this research by the most important predictor of dimensions of social cohesion: residents' perceptions of quality of the neighbourhood, and the apparent direct dependence of this indicator on other features of quality. It is unclear to what extent each feature of quality contributes to a resident's perception of the quality of a neighbourhood. Correlation analysis suggests that the attractiveness, and then the safety and the maintenance of the built environment, in that order, are the most closely related to it (Appendix H), while research carried out by CABE and the BBC suggests that much of the perception users form about space relates to how that space is managed or maintained (2002, in Carmona *et al.*, 2004, p. 25). When asked to describe a high quality neighbourhood, the majority of interviewees in this research referred to features of quality of the built environment. However, a large proportion of the sample also referred to social characteristics of the population, as well as to other features of the built environment. This

suggests that in perceiving the neighbourhood around them, residents do not refer simply to the physical environment, but also take into account the nature of other residents and, potentially, a number of other indicators not identified in this research.

It can therefore be argued that it is right for neighbourhood renewal, urban planning and design policy to focus on improving not only the physical quality of streets and public spaces, but also their perceived quality in the eyes of residents (ODPM, 2002; 2005c). For example, in its aim to support prosperous and cohesive communities which offer a safe, healthy and sustainable environment for all, the DCLG has focused on the quality of the built environment as a means of achieving 'sustainable communities' (2006a). However, for such policy to be effective in achieving such improvements, it seems that joined-up approaches are necessary. As well as improving the quality of the built environment in a neighbourhood, the DCLG should address other matters which may contribute to perceptions of quality and relate to the day-to-day lives of residents. Recognizing this, the DCLG has established Public Service Agreement (PSA) Target 8 for local authorities to adhere to; this aims to 'lead the delivery of cleaner, safer and greener public spaces and improvement of the quality of the built environment in deprived areas and across the country, with measurable improvement by 2008' (2006c). Two of the seven priorities of PSA Target 8 (of particular relevance to this research) are to increase the proportion of residents satisfied with local open space and parks and to increase the proportion of households satisfied with the quality of the places in which they live (ibid.). The correlation analysis in this research indicates that features of quality, physical and non-physical, contribute directly to such perceptions. This suggests that policy which focuses on increasing residents' satisfaction with their neighbourhood and improving their perceptions of the quality of the neighbourhood must go hand in hand with policy which seeks to improve the quality of the built environment of the neighbourhood. Primary data collected also shows that, in addition, elements such as crime levels, police presence, the quantity of road traffic and the nature of services and facilities in the neighbourhood may also have a bearing on residents' perceptions of quality. This is further reflected in the significant associations that intervening, or interfering, variables, such as the characteristics of residents and households had with dimensions of social cohesion. The research therefore supports the incorporation of such aspects into the government's 'sustainable communities' plan (ODPM, 2005c). While it is outside the scope of this research to ascertain how successful is the policy at forming such communities, its findings suggest that, hypothetically at least, the inclusion of the quality of the built environment alongside other non-physical factors can contribute significantly to explanations of social cohesion in neighbourhoods.

9.3.9 Retaining the essence of high quality

It can be argued from these findings that focus for future policy and practice should be on promoting high quality in the built environment which does not undermine or jeopardize the very characteristics which make a place distinctive or give it its character. These aspects of high quality built environments are as important as other, more objectively measured features such as the extent of mixed uses, attractiveness or maintenance. The 'placelessness' that Relph describes could arguably be attributed to the creation of places that adhere only to a number of the features of quality of the built environment identified in this research rather than to them all (1976). The research has shown that the features of quality are inter-related and interdependent, and for a neighbourhood to be accurately described as high quality, it should have all of those features identified, and more, if the neighbourhood is to be described as socially cohesive as well. This suggests that a holistic definition of high quality built environment in neighbourhoods is based not only on characteristics of the built environment and features of quality of the built environment, but also on dimensions of social cohesion and the social characteristics of the people living in that neighbourhood. Subjective as well as objective features must be included in urban policy and practice, such as regeneration programmes and neighbourhood renewal, for them to be meaningful at the local level if high quality neighbourhoods are to be achieved.

It was not possible in this research to clarify whether objective or subjective indicators are more important in assessing the quality of a place, or, within those categories, particular objective or subjective indicators are more significant than others. The nature of the indicators employed in this research also contributes to such difficulties. It is however clear from the research that all of these indicators have some association with a resident's perception of the quality of a neighbourhood, which, the research shows, is also the indicator of quality of the built environment most significantly associated with dimensions of social cohesion. While it is impossible to state exactly how much influence each feature of quality has on residents' perceptions of the quality of the neighbourhood, it is clear that such influence exists and should be accounted for. Given the research limitations outlined above, it would be difficult to do this with any degree of certainty. This does point to the need for future research which would better inform policy and practice in order, to paraphrase the Deputy Prime Minister John Prescott, to fully understand the claimed beneficial effects that the quality of our public space has on the quality of our lives (ODPM, 2002, p. 5).

9.4 Scope for further research

There is considerable scope for extending this research. Section 9.2 above outlined the limitations of this research which, in themselves, present opportunities for future research. To address the issues of how to reconcile the variation in neighbourhoods' attributes shown in this research with the provision of practical and robust guidance, a number of steps could be taken. The research could be extended to include a greater number of neighbourhoods with greater variation in the quality of their built environment features in order to examine more fully their associations with social cohesion. Other methods of analysis, such as multilevel analysis, could be applied to the dataset to examine the influence of between-neighbourhood and within-neighbourhood differences, as well as to account for the difference in scale of the indicators involved, particularly if a greater number of neighbourhoods is examined. Adapting the research design to include a broader sweep of indicators for each feature of quality of the built environment could, for example, address the difficulties encountered when measuring 'attractiveness'. Embracing the subjective nature of such a feature by, for example, including a greater number of indicators measuring residents' perceptions, could strengthen the overall research design.

It is clear that there are other influences on social cohesion alongside the quality of the built environment. This research could be developed further to focus on these other influences in order to gain a fuller understanding of the concept of social cohesion in the neighbourhood; this understanding could also be built on to increase knowledge of how social cohesion occurs and develops at different scales and settings.

While taking into account the negative aspects of social cohesion which can arise in neighbourhoods, such as avoiding one's neighbours, this research did not address the negative social effects to which variations in high quality built environments can be said to contribute. There are claims, for example, that gated communities and gentrified neighbourhoods are socially segregated settings which can reduce residents' sense of community and social cohesion (Rykwert, 2000; Lupi and Musterd, 2006; Gottdiener and Hutchinson, 2000), while this is questioned elsewhere (Manzi and Smith-Bowers, 2005; Forrest and Kearns, 2001). There is also scope for increasing the diversity of built environments in future research, such as rural settlements and, at a smaller scale, different housing types, densities and street layouts. While these different settings were outside its scope, the methods used here could readily be adapted and applied to such neighbourhoods. A further possibility is to examine housing developments claimed to be of a high quality, and assess them according to the criteria developed in this research.

The definition of high quality in the built environment could also be developed further for use in further research. Firstly, while it was not possible in this research to create an

overall score of quality of the built environment, it may be useful to develop the indicators and collate scores to create one 'headline' indicator. This might facilitate the comparison of different neighbourhoods or urban settings or different samples in a population. Secondly, it has been argued throughout this thesis that high quality means different things to different people. Different users or stakeholders in the built environment, such as housing developers, planners, urban designers, local authorities and residents, are identified as having distinct roles in the built environment, as well as different interpretations of high quality (Mulgan *et al.*, 2006). Identifying the different ways in which high quality is defined and the impacts that such interpretations have on users of the built environment would be complementary to this research.

Further to this, while a number of characteristics such as the age, sex and economic status of residents were taken into account in this research, there is scope to examine the effect that the quality of the built environment has on specific users in a neighbourhood. Such users include children, teenagers, as well as disabled people including wheelchair users and blind people, upon whom the built environment may have a very specific impact (Guide Dogs for the Blind Association, 2006; Loukaitou-Sideris and Stieglitz, 2002; Fleck, 1998).

There is also scope for examining the claimed relationship that high quality neighbourhoods are said to have with social benefits such as improved mental health, physical health, and sense of well-being. Existing research is focused on particular aspects of the neighbourhood, such as open space (Devine-Wright *et al.*, 2006) and specific aspects of health, such as dementia (Mitchell *et al.*, 2004). However, this type of inquiry could be extended to include the quality of the built environment in neighbourhoods on these specific aspects.

The focus on urban sustainability in UK policy provides some scope for further research which could examine the potential concord or conflict of high quality built environments as an objective of urban planning and urban design with other objectives related to environmental or economic sustainability. Assessing how well a high quality built environment fulfils the different criteria of sustainability and the possible trade-offs could form part of such research.

This research has provided empirical evidence which can be used to inform local neighbourhood management strategies. Further work should assess how such strategies can be implemented; this may involve the operationalization of objectives and the development of indicators such as those employed in this research. Future study might involve examining such strategies when implemented, to evaluate their effectiveness according, for example, to criteria set by local authorities or policy-led national

benchmarks. The success of such strategies might be measured by residents' perceptions of the quality of the built environment.

Finally, it was not possible in this research to assess the quality of services and facilities, such as schools, public transport services and open spaces in a neighbourhood. It could be useful to incorporate this assessment into a widened definition of a high quality neighbourhood in order to provide a broader understanding of people's motivations to move in and out of a neighbourhood, which might, for example, be dependent on the quality of the schools in an area.

9.5 Social cohesion in the neighbourhood: is it worth pursuing?

It is pertinent to conclude the research by posing the question of whether, on balance, the pursuit of social cohesion through improving the quality of the built environment in neighbourhoods is worthwhile. The findings suggest that the quality of the built environment does contribute to social cohesion in English neighbourhoods, but that the strength and nature of the association differs between different features of quality. It is, however, clear from the research that there are other, more important influences on the individual dimensions of social cohesion in English neighbourhoods. These might be other dimensions of social cohesion, social characteristics of the population, or be unknown because they were not included in the research. The focus on the quality of the built environment in policy and practice is justified by the findings of this research, as Section 9.3 details. However, it cannot be assumed that developers, urban designers, planners and architects will have, or will reach, the overriding goal of achieving social cohesion in neighbourhoods when creating, designing or renewing the built environment. While the government's 'sustainable communities' plan and national regeneration programme go some way to addressing this goal, it should be noted that social cohesion is encompassed within the definition of a socially sustainable community and is one of a number of desirable outcomes of such policies relating to sustainability as a whole.

It is argued that there are other ways of achieving social cohesion in neighbourhoods, not explicitly involving the quality of the built environment. The ODPM Housing, Planning, Local Government and the Regions Committee, in its report on social cohesion, concluded that social cohesion can be achieved (or, at least, not hindered) through improving the quality of life for all citizens. This should be addressed in policies and services developed and provided by public agencies (2004, p. 64). It is argued that these policies relate to education, youth provision, local services, regeneration programmes and the needs of vulnerable people (ibid.). Housing provision and the state of housing have also been identified, not without controversy, as having a causal association with levels of

social cohesion (Robinson, 2003). Such claims, however, are not based on empirical evidence; it remains to be seen exactly how much influence either of these factors might have on social cohesion. It is clear that this research is unable to explain all of the variation in social cohesion in the neighbourhoods sampled, and it may be that these other features are significant contributory factors.

If policy and practice aiming to achieve social cohesion in neighbourhoods are to be pursued, it is important that the associations such cohesion has with physical and non-physical aspects of a neighbourhood are identified and understood. This research has considered one such aspect and goes some way to identifying what supports, or hinders, the day-to-day functioning of neighbourhoods in England. While it is not the only factor involved, the quality of the built environment has been shown to have an important association with social cohesion in a neighbourhood. It is therefore the case that this research supports the assertions made in policy, practice and theory that residents' feelings about where they live, and how they live their lives, are affected by the quality of the environment around them.

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Appendices

Appendix A

Household Questionnaire Survey

CITY FORM

Questionnaire

The Place Where You Live

Dear Householder

Researchers at Oxford Brookes University are carrying out important national research about your neighbourhood as part of a nationwide research project called 'CityForm'. This research is funded by one of the UK's Research Councils and aims to find out what is best and most sustainable about your local neighbourhood environment.

Your house is located within a carefully selected sample area and your responses to our questions will be highly valued and are vitally important for the project. We would very much appreciate your time and effort in filling out this questionnaire.

We would like to ask you or your spouse/partner to complete this questionnaire. (The householder is an owner/joint owner of a property or, if renting, the tenant/joint tenant). This will only take a short amount of your time, and your answers will be kept strictly confidential, private and anonymous. If you are unhappy answering any questions, please leave them blank.

There is also a version of this questionnaire which is suitable for visually impaired people – please contact us should you require one.

Thank you in advance for your help.

EPSRC Engineering and Physical Sciences Research Council

OXFORD BROOKES UNIVERSITY

Please use ticks to answer the questions ☑

In case of any queries about this questionnaire, please contact Nicola Dempsey on 01865 483349. You can also visit the CityForm website at: www.city-form.org

First we would like to ask you some questions about your current address

1. Do you (or other household member) own or rent your home?
☐ Own outright/Own with a mortgage/ loan
☐ Pay part rent part mortgage (shared ownership)
☐ Rent from public sector (e.g. council, housing association, registered social landlord)
☐ Rent from the private sector

2. What type of accommodation do you live in?
☐ Detached house
☐ Detached bungalow
☐ Semi-detached house
☐ Semi-detached bungalow
☐ Terraced house
☐ Terraced bungalow
☐ End of terrace house/bungalow
☐ Purpose built flat/maisonette (or tenement)
☐ Converted flat/maisonette
☐ Dwelling above shop/ office
☐ University halls of residence

3. What is the lowest floor level of your household's <u>living</u> accommodation?
☐ Basement or semi-basement
☐ Ground floor (street level)
☐ First floor (floor above street level)
☐ Second floor
☐ Third or fourth floor
☐ Fifth floor or higher

4. How many bedrooms are there in your home?
Please state number: _____

5. Do you have access to...?
(Please tick all that apply)

☐ A private garden
☐ A shared/communal garden
☐ A patio or yard
☐ A roof terrace or large balcony
☐ None of the above

If 'none of the above' please go to Q. 9.

6. Which of the following do you have outside? (Please tick all that apply)

☐ Bird feeder/ table ☐ Bird bath
☐ Pond ☐ Nest box
☐ Compost heap ☐ None of these

7. How often do you (or other members of your household) provide food for wild animals outside your home (in your garden, balcony etc)?
Birds:
☐ Daily ☐ Less than monthly
☐ Weekly ☐ Never
☐ Monthly

Other wild animals (e.g. foxes, hedgehogs):
☐ Daily ☐ Less than monthly
☐ Weekly ☐ Never
☐ Monthly

8. In a typical week in the summer months approximately how much gardening work is done in your garden (e.g. cutting the lawn, trimming hedges, weeding)?

Please write the average number of hours:

_____ Hours

9. How do you heat your home?

(a) Main Fuel (Please tick one only)
☐ Gas ☐ Oil
☐ Electric ☐ Solid Fuel
☐ LPG ☐ Other

(b) Main System (Please tick one only)
☐ Central heating with radiators
☐ Storage heaters
☐ Warm air system
☐ Room heaters
☐ Under floor heating
☐ Other

(c) Additional heating
(Please tick any in frequent use)
☐ None
☐ Gas room heater
☐ Gas fire open to chimney
☐ Gas fire not open to chimney (flued)
☐ Other gas heater
☐ Solid fuel open fire
☐ Solid fuel closed fire/stove
☐ Fixed electric heaters/fires
☐ Portable electric heaters/fires
☐ Other

10. Which of the following appliances do you have in your home?
(Please tick any in frequent use)
- ☐ Washer-dryer combined
- ☐ Washing machine
- ☐ Tumble dryer
- ☐ Dishwasher
- ☐ Fridge-freezer
- ☐ Separate fridge
- ☐ Separate freezer
- ☐ Electric cooker or electric oven
- ☐ Microwave
- ☐ Television - please state number:_____

11. How satisfied are you with the following aspects of your home?

	Very satisfied	Fairly satisfied	Neither satisfied nor dissatisfied	A little dissatisfied	Very dissatisfied	Don't know
Number of rooms	☐	☐	☐	☐	☐	☐
Size of rooms	☐	☐	☐	☐	☐	☐
Condition of dwelling	☐	☐	☐	☐	☐	☐
Privacy	☐	☐	☐	☐	☐	☐
Garden etc	☐	☐	☐	☐	☐	☐
Parking provision	☐	☐	☐	☐	☐	☐
Overall satisfaction	☐	☐	☐	☐	☐	☐

12. How long have you lived in your current home? _____years _____months

13. Do you expect to move from your home within the next few years?
- ☐ Yes
- ☐ No **If no, please go to question 15.**

14. If yes, why do you expect to move?
(Please tick one only)
- ☐ Changing tenure e.g. from renting to owning
- ☐ Accommodation reasons
- ☐ Area reasons
- ☐ Job reasons
- ☐ Personal reasons
- ☐ Other

Now, thinking a little more about your neighbourhood, that is the area within approximately 5-10 minutes walk from your house...

15. Do you agree that the building of more houses (say at least twice as many) in your neighbourhood would be a good thing?
- ☐ Strongly agree
- ☐ Tend to agree
- ☐ Neither agree nor disagree
- ☐ Tend to disagree
- ☐ Strongly disagree

16. What effect do you think the building of more houses would have on the following?

	Positive Effect	No Effect	Negative Effect	Don't Know
Appearance of the area	☐	☐	☐	☐
Provision of local services	☐	☐	☐	☐
Public transport provision	☐	☐	☐	☐
Green space	☐	☐	☐	☐
On-street parking	☐	☐	☐	☐

	Increase	No Effect	Decrease	Don't Know
Traffic levels	☐	☐	☐	☐
Property values	☐	☐	☐	☐
Pollution	☐	☐	☐	☐

17. How safe do you feel walking alone in your neighbourhood after dark?
- ☐ Very safe
- ☐ Fairly safe
- ☐ A bit unsafe
- ☐ Very unsafe
- ☐ Never go out alone after dark

18. How would you rate the following aspects of <u>your neighbourhood</u>? *

	Very good	Fairly good	Neither good nor bad	Fairly bad	Very bad	Don't know
Your neighbourhood as a place to live						
General appearance of area (i.e. attractiveness)						
Street lighting						
Open spaces and parks						
Provision of shops						
Provision of recreational facilities						
Condition of other homes/ gardens within the neighbourhood						

19. In your neighbourhood, how much of a problem are the following?

	Not a problem	Minor problem	Serious problem	Don't know
Noise from neighbours				
Disturbance by children or youngsters				
Crime in the area				
Litter and graffiti				
Lack of parking				
Amount of traffic				

20. How strongly do you agree or disagree with each of the following statements?

	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree
I can easily reach public transport services on foot					
I feel safe and comfortable waiting for public transport services in this neighbourhood					
Public transport is frequent and reliable in this neighbourhood					
Public transport goes when and where I want it to go					

21. Approximately how often do you (or your children in the case of facilities for young children) use the following services/ facilities in <u>your neighbourhood</u>?

	Most days	At least once a week	At least once a month	Occasionally	Don't use	Not applicable
Chemist						
Corner shop/ convenience store						
Supermarket						
Post office						
Bank/ building society						
Restaurant/ café/ takeaway						
Pub						
Library						
Public sports facilities (e.g. leisure centre)						
Community centre/ venue for evening classes						
Facilities for children/young people						

* (that is the area within 5-10 minutes walk from your home)

22. Approximately how often do you use neighbourhood open spaces/parks for the following? (Please tick for each activity)

	Most days	At least once a week	At least once a month	Occasionally	Never	No access
Sport						
Exercise (walking/running)						
Walking the dog						
Being in a natural environment						
Seeing local wildlife						
Feeding the ducks						
Taking children to play						
Meeting friends/family						

23. How adequately do you think your neighbourhood open spaces/parks provide opportunities for you to do the following? (Please tick for each activity)

	Completely adequate	Fairly adequate	Neither adequate nor inadequate	Fairly inadequate	Completely inadequate	Don't know
Sport						
Exercise (walking/running)						
Taking children to play						
Walking the dog						
Seeing local wildlife						

24. In your free time, which of the following activities do you undertake regularly (that is, at least once a month)? (Please tick all that apply)

	Within your neighbourhood	Outside your neighbourhood but within the city	Outside the city
See friends / family socially			
Sports/ exercise groups (including taking part, coaching or watching)			
Adult education groups			
Local community or neighbourhood groups (including residents' associations, parent-teacher associations)			
Support groups (e.g. health and welfare groups)			
Religious groups			
Other groups			

Now we want to ask you about the people you know...

25. Not counting the people you live with, how often do you see friends/relatives?

- ☐ Everyday/Most days
- ☐ At least once a week
- ☐ At least once a month
- ☐ At least once a year
- ☐ Never

26. Of these friends/ relatives, how many of them live in your neighbourhood?

- ☐ None
- ☐ One or two
- ☐ Three or four
- ☐ Five or more

27. How many of your neighbours would you say that:

	None	A few	Some	Most	All
You see socially on average once a week					
You have a chat with/greet					
You would ask to borrow food/ tools from					
You know by name					
You have no contact with					
You avoid contact with					

28. How strongly do you agree or disagree with each of the following statements?

	Strongly agree	Tend to agree	Neither agree/ disagree	Tend to disagree	Strongly disagree
If I needed a favour, I could rely on someone in this neighbourhood to help me.					
This is a place where neighbours look out for each other					
I feel that I am unable to influence decisions in the neighbourhood					
I am proud of my neighbourhood					
Compared with other neighbourhoods, this one has many advantages					
This is a friendly neighbourhood					
I feel that I belong to this neighbourhood					
My local neighbourhood reflects the type of person I am					
People from different backgrounds get on well together in this neighbourhood					

Personal and Household Information

29. Are you:
☐ Male ☐ Female

30. Please tick your age group
☐ 16 to 24 yrs ☐ 25 to 34 yrs
☐ 35 to 44 yrs ☐ 45 to 54 yrs
☐ 55 to 64 yrs ☐ 65 yrs or above

31. To which of these groups do you consider you belong?
☐ White
☐ Black - Caribbean
☐ Black - African
☐ Black – Other black groups
☐ Indian
☐ Pakistani
☐ Bangladeshi
☐ Chinese
☐ None of these

32.Which of the following best describes your economic status?
☐ Employed full-time (more than 30 hours/ week)
☐ Employed part-time (less than 30 hours/ week)
☐ Self-employed/freelance
☐ Unemployed/seeking work
☐ Retired
☐ Looking after family/home
☐ Full-time student at college/university
☐ Long term sick or disabled
☐ Other

33. Please give the full title by which your job (or your last job) is known (include rank or grade if you have one).

_____

_____

34. If working or studying, please can you state the name of the employer/ organisation and as much of the address and post code as possible of the main place of work/study for you and (if applicable) spouse/partner. If work/study mainly from home please write 'HOME'.

(a) You:

_____

_____

Post code: ☐☐☐☐☐☐☐☐

(b) Partner:

_____

_____

Post code: ☐☐☐☐☐☐☐☐

35. Do you have a full driving licence?
☐ Yes ☐ No

36. How many cars and other 4-wheel vehicles are available to members of the household for personal use?
Please state number: _____

37. How many motorcycles are available in your household?
Please state number: _____

38. How many adult bicycles are available in your household?
Please state number: _____

39a. Where relevant, how do you (and your spouse/partner if applicable) usually travel to your main place of work or study?
(Please chose main mode by distance)
You:
☐ Public transport
☐ Driving a car/van alone
☐ Driving a car/van with household member as passenger
☐ Driving a car/van with a passenger who is not a household member
☐ Passenger in car/van driven by a household member
☐ Passenger in a car/van driven by someone outside your household
☐ On foot/bicycle
☐ Other

39b. Your spouse/partner (if applicable):
☐ Public transport
☐ Driving a car/van alone
☐ Driving a car/van with household member as passenger
☐ Driving a car/van with a passenger who is not a household member
☐ Passenger in car/van driven by a household member
☐ Passenger in a car/van driven by someone outside your household
☐ On foot/bicycle
☐ Other

40. Where relevant, is free parking available at your place of work/study or on the street nearby?
☐ Yes ☐ No

41. If you and /or your partner/spouse drive to work or study, please estimate the average cost per day of parking there.

You: _____

Spouse/Partner: _____

42. How many people are there in your household?
Please write number: _____

43. Which of the following headings best describes the composition of your household? (Tick the option which matches your household type)
☐ One adult under 60
☐ One adult aged 60 or over
☐ Two adults both under 60
☐ Two adults, at least one 60 or over
☐ Three or more adults, 16 or over
☐ 1-parent family with child/ren, at least one under 16
☐ 2-parent family with child/ren, at least one under 16
☐ Other

44. Can you please look at the list below and give us your total income and your total household income as an annual amount?

	You	Household (Total including you)
Under £10,000 per year		
£10,000 - £19,999		
£20,000-£29,999		
£30,000 -£49,999		
£50,000 - £79,999		
£80,000 or more		

45. Can you tell me approximately how much your household spends each <u>week</u> on food and groceries? (Please exclude eating out)
☐ Under £10 ☐ £10-£19
☐ £20-£29 ☐ £30-£39
☐ £40-£49 ☐ £50-£59
☐ £60-£79 ☐ £80-£99
☐ £100-£119 ☐ £120-£139
☐ £140-£159 ☐ £160 or over

46. What percentage of this food expenditure does your household spend in your local neighbourhood (I.e. within approximately 10 minutes walk from your home) compared with shops further a field?
☐ 0-25% ☐ 26-50%
☐ 51-75% ☐ 76-100%

47. Where does your household do its main food/grocery shopping? (Please tick one only)
☐ Aldi ☐ ASDA
☐ Coop (Scotmid) ☐ Iceland
☐ Lidl ☐ Marks and Spencers
☐ Sainsbury ☐ Morrisons/Safeway
☐ Somerfield ☐ Tesco
☐ Waitrose ☐ Other

48. Approximately, how often does your household use this store?
☐ Every day/most days
☐ Around once a week
☐ Less than once a week

49. How do members of your household normally travel to do its main food/grocery shopping?
☐ Walk/cycle
☐ Public Transport
☐ Car, van or taxi
☐ Home delivery

50. Did you vote in the last local election?
☐ Yes ☐ No

If you can provide accurate details of your household energy consumption for the last year, or would give permission for us to obtain them from your suppliers, please tick this box: ☐

Thank you very much for your time and help in filling out the questionnaire

Appendix B

Site Survey

Litter – Code level of litter in streets as follows using the following photos as examples:

1 – no litter or refuse

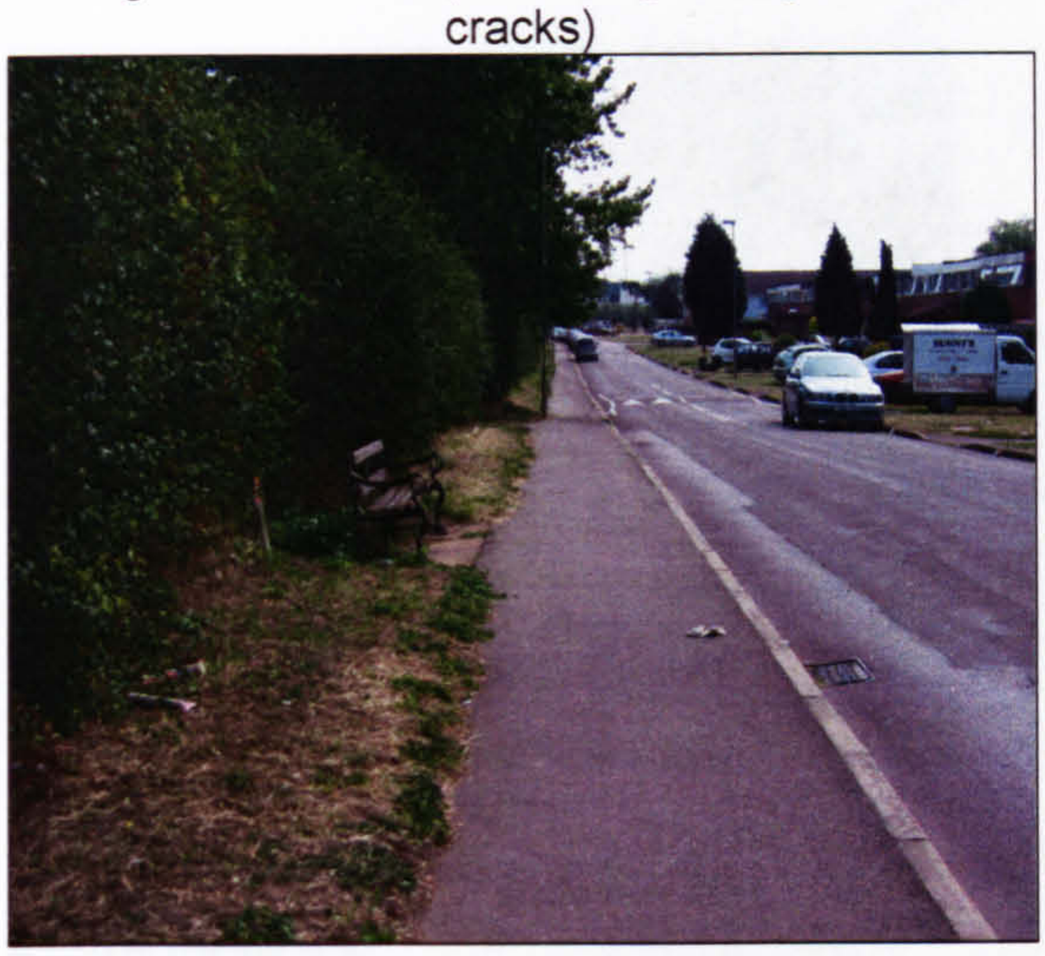
2 – predominantly free of litter and refuse apart from some small items

3 – widespread distribution of litter and refuse with minor accumulations

4 – heavily littered with significant accumulations

Pavement condition – Code using the following photos as examples:

1 – good condition (no raising of flagstones or cracks)

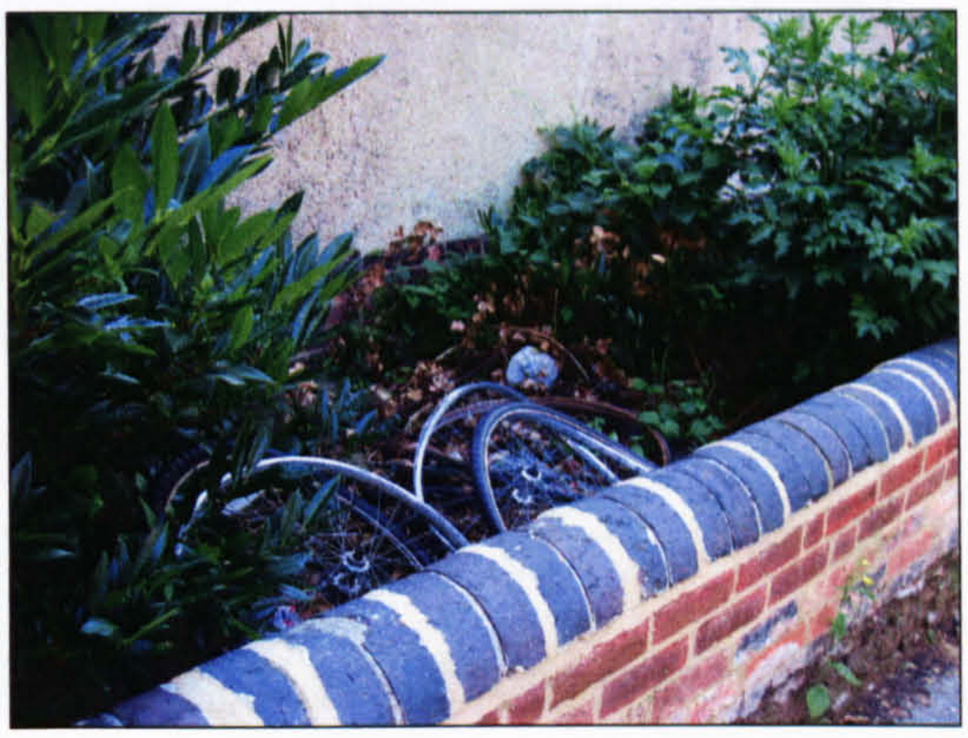


2 – some minimal raising of flagstones, some cracks

3 – trips and holes forming/ some small trips and holes already formed

4 – large holes and trips

Condition of homes and gardens – examples of poor condition of homes and gardens



Active and Dead Street Frontage – Use the following photos as examples

Active street frontage

Dead street frontage

Unq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active_front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bwn gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
1	Mushroom Lane	Sheffield	Netherthorpe	2	0	0%	201-250m	300+	2.0m	3	2	7	3	41-50%	4	2	41-50%	2	0	n/a	0	0	0	n/a	park
2	Western Bank	Sheffield	Netherthorpe	11	6	51-75%	151-200m	101-200	3 0m	2	1	0	0	n/a	4	4	100%	0	5	wall/boll	0	2	2	100%	park
3	Brook Hill	Sheffield	Netherthorpe	8	2	0-25%	76-100m	21-30	3m+	2	1	3	1	31-40%	5	5	100%	0	1	steps	0	2	2	100%	uni bldg
4	Winter Street	Sheffield	Netherthorpe	2	0	0%	151-200m	11-20	3m+	1	2	0	0	n/a	4	4	100%	0	0	n/a	0	2	2	100%	Tower Court
5	Bolsover Street	Sheffield	Netherthorpe	14	8	51-75%	401-500m	21-30	3 0m	1	2	1	1	100%	2	2	100%	4	12	bollards	0	3	3	100%	roundabout
6	Weston St	Sheffield	Netherthorpe	31	25	76-99%	41-50m	21-30	3 0m	2	3	0	0	n/a	10	6	51-60%	0	0	n/a	1	0	0	n/a	0
7	Dart Square	Sheffield	Netherthorpe	2	1	26-50%	n/a	21-30	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
8	Summer Street	Sheffield	Netherthorpe	36	34	76-99%	201-250m	1-10	3 0m	2	1	14	1	0-10%	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
9	Yardley Sq	Sheffield	Netherthorpe	13	6	51-75%	n/a	1-10	3 0m	2	2	0	0	n/a	2	0	0%	0	1	wall	1	0	0	n/a	0
10	Sutton St	Sheffield	Netherthorpe	8	5	51-75%	n/a	11-20	3 0m	2	2	2	2	100%	2	0	0%	3	0	n/a	0	0	0	n/a	tower blocks
11	Mitchell St	Sheffield	Netherthorpe	11	8	51-75%	n/a	11-20	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
12	Powell St	Sheffield	Netherthorpe	22	22	100%	41-50m	1-10	3 0m	2	1	0	0	n/a	4	0	0%	0	0	n/a	1	0	0	n/a	0
13	Bramwell St	Sheffield	Netherthorpe	36	18	26-50%	151-200m	1-10	3 0m	2	2	2	0	0%	4	2	41-50%	0	1	wall	0	2	0	0%	0
14	Bramwell Dr	Sheffield	Netherthorpe	16	16	76-99%	201-250m	11-20	3 0m	1	1	0	0	n/a	4	2	41-50%	0	1	low fence	0	0	0	n/a	0
15	Bramwell Court	Sheffield	Netherthorpe	1	0	0%	n/a	0	n/a	-1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
16	Bramwell Cl	Sheffield	Netherthorpe	11	11	100%	n/a	1-10	n/a	-1	1	0	0	n/a	2	2	100%	0	1	wall	0	0	0	n/a	0
17	St. Stephen's Wk	Sheffield	Netherthorpe	12	10	76-99%	n/a	1-10	3 0m	1	1	1	1	100%	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
18	St. Stephen's Rd	Sheffield	Netherthorpe	7	3	26-50%	51-75m	31-50	3m+	3	1	1	1	100%	2	1	41-50%	1	1	wall	1	0	0	n/a	2
19	Finlay St	Sheffield	Netherthorpe	2	0	0%	n/a	1-10	3 0m	3	2	2	0	0%	2	1	41-50%	0	8	mixture of 2+	0	0	0	n/a	0
20	Fawcett St	Sheffield	Netherthorpe	33	26	76-99%	251-300m	51-100	3 0m	2	1	1	0	0%	4	2	41-50%	2	1	steps	1	0	0	n/a	church
21	St. Philip's Rd	Sheffield	Netherthorpe	21	13	51-75%	21-30m	1-10	3 0m	2	1	2	1	41-50%	14	6	41-50%	3	0	n/a	0	2	2	100%	0
22	Hammond St	Sheffield	Netherthorpe	12	7	51-75%	76-100m	21-30	3m+	1	2	2	1	41-50%	4	1	21-30%	1	1	wall	0	0	0	n/a	0
23	Daisy Bank	Sheffield	Netherthorpe	5	3	51-75%	n/a	1-10	3 0m	2	2	2	0	0%	2	0	0%	0	1	wall	0	0	0	n/a	0
24	Jericho St	Sheffield	Netherthorpe	16	13	76-99%	n/a	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	3	wall/steps	0	0	0	n/a	0
25	Dover St	Sheffield	Netherthorpe	11	9	76-99%	76-100m	11-20	3m+	3	1	0	0	n/a	2	2	100%	2	0	n/a	0	0	0	n/a	0
26	Bellefield St	Sheffield	Netherthorpe	24	11	26-50%	41-50m	21-30	3 0m	2	1	0	0	n/a	2	1	41-50%	2	0	n/a	0	0	0	n/a	0
27	Ellison St	Sheffield	Netherthorpe	4	1	0-25%	n/a	21-30	3 0m	1	1	3	2	61-70%	2	0	0%	0	0	n/a	0	0	0	n/a	0
28	Netherthorpe St	Sheffield	Netherthorpe	7	3	26-50%	n/a	11-20	3 0m	2	2	5	1	11-20%	2	0	0%	0	1	n/a	0	0	0	n/a	school
29	Watery St (part)	Sheffield	Netherthorpe	9	3	26-50%	n/a	1-10	3 0m	2	2	0	0	n/a	2	2	100%	2	1	wall	0	2	2	100%	0
30	Meadow St (one side)	Sheffield	Netherthorpe	7	4	51-75%	41-50m	21-30	3m+	3	2	0	0	n/a	6	5	81-90%	1	0	n/a	1	2	1	41-50%	0
31	Netherthorpe Pl	Sheffield	Netherthorpe	7	0	0%	n/a	1-10	3m+	2	2	0	0	n/a	2	2	100%	1	0	n/a	0	0	0	n/a	0
32	Dover Gardens	Sheffield	Netherthorpe	6	3	26-50%	n/a	11-20	3 0m	1	1	0	0	n/a	0	0	n/a	1	0	n/a	2	0	0	n/a	0
33	Whitham Road	Sheffield	Netherthorpe buffer	52	49	76-99%	151-200m	31-50	3m+	3	2	0	0	n/a	12	8	61-70%	1	0	n/a	0	6	4	61-70%	0
34	Turners Lane	Sheffield	Netherthorpe buffer	6	2	26-50%	n/a	1-10	3 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
35	Parker's Rd	Sheffield	Netherthorpe buffer	35	26	51-75%	251-300m	21-30	3m+	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
36	Parker's Lane	Sheffield	Netherthorpe buffer	20	3	0-25%	n/a	11-20	1 5m	3	2	0	0	n/a	2	2	100%	2	1	wall	0	0	0	n/a	0
37	Moor Oaks Rd	Sheffield	Netherthorpe buffer	28	24	76-99%	76-100m	31-50	3m+	3	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
38	Marlborough Rd	Sheffield	Netherthorpe buffer	35	27	76-99%	51-75m	31-50	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
39	Elmore Rd	Sheffield	Netherthorpe buffer	31	21	51-75%	76-100m	11-20	3 0m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
40	Highnam Crescent Rd	Sheffield	Netherthorpe buffer	15	9	51-75%	101-150m	21-30	3m+	2	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
41	Crookesmoor Rd	Sheffield	Netherthorpe buffer	123	123	100%	251-300m	51-100	3 0m	2	3	0	0	n/a	6	2	31-40%	2	0	n/a	2	6	1	11-20%	2
42	Redcar Rd	Sheffield	Netherthorpe buffer	36	19	51-75%	101-150m	31-50	3m+	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
43	Conduit Rd	Sheffield	Netherthorpe buffer	34	30	76-99%	101-150m	21-30	3 0m	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
44	Northumberland Rd	Sheffield	Netherthorpe buffer	15	3	0-25%	41-50m	101-200	3 0m	3	1	0	0	n/a	8	6	71-80%	0	3	wall	0	0	0	n/a	playing fields
45	Elliott Rd	Sheffield	Netherthorpe buffer	12	8	51-75%	51-75m	1-10	3 0m	2	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
46	Netherthorpe Rd	Sheffield	Netherthorpe buffer	6	1	0-25%	76-100m	31-50	3 0m	2	2	0	0	n/a	2	2	100%	6	1	wall	0	0	0	n/a	0
47	Harcourt Rd & Cresc	Sheffield	Netherthorpe buffer	103	62	51-75%	401-500m	21-30	3 0m	3	4	0	0	n/a	6	3	41-50%	0	2	wall	3	0	0	n/a	0
48	Spring Hill	Sheffield	Netherthorpe buffer	23	17	51-75%	151-200m	11-20	2 5m	3	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
49	Commonside	Sheffield	Netherthorpe buffer	39	26	51-75%	76-100m	21-30	2 5m	3	2	0	0	n/a	10	4	31-40%	4	1	wall	0	5	2	31-40%	0
50	Moorgate Ave	Sheffield	Netherthorpe buffer	7	3	26-50%	n/a	11-20	2 5m	2	3	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
51	Beehive Rd	Sheffield	Netherthorpe buffer	37	27	51-75%	n/a	1-10	n/a	2	2	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
52	Warrington Rd	Sheffield	Netherthorpe buffer	21	21	100%	51-75m	1-10	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
53	The Nook	Sheffield	Netherthorpe buffer	18	18	100%	n/a	1-10	3 0m	2	2	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
54	Barber Rd	Sheffield	Netherthorpe buffer	48	46	76-99%	51-75m	1-10	3m+	3	1	0	0	n/a	10	5	41-50%	0	0	n/a	1	1	0	41-50%	0
55	Burns Rd	Sheffield	Netherthorpe buffer	62	50	76-99%	76-100m	1-10	3 0m	3	2	0	0	n/a	2	0	0%	0	0	n/a	2	0	0	n/a	0
56	Roebuck Rd	Sheffield	Netherthorpe buffer	47	43	76-99%	151-200m	11-20	2 5m	2	2	0	0	n/a	6	1	11-20%	0	0	n/a	0	0	0	n/a	0
57	Sydney Rd	Sheffield	Netherthorpe buffer	46	40	76-99%	41-50m	1-10	2 5m	2	2	0	0	n/a	4	3	71-80%	0	0	n/a	2	0	0	n/a	0
58	Springvale Rd	Sheffield	Netherthorpe buffer	18	14	76-99%	101-150m	21-30	3 0m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
59	Wellfield Rd	Sheffield	Netherthorpe buffer	10	0	0%	76-100m	21-30	3m+	1	4	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
60	Wellfield Close	Sheffield	Netherthorpe buffer	11	11	100%	n/a	1-10	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
61	Crookesmoor Dr	Sheffield	Netherthorpe buffer	25	22	76-99%	n/a	11-20	3 0m	2	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
62	Ashberry Rd	Sheffield	Netherthorpe buffer	35	17	26-50%	201-250m	11-20	3 0m	2	3	0	0	n/a	6	1	11-20%	0	0	n/a	0	0	0	n/a	0
63	Albion Street	Sheffield	Netherthorpe buffer	5	2	26-50%	51-75m	21-30	3m+	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
64	Addy Street	Sheffield	Netherthorpe buffer	29	18	51-75%	76-100m	31-50	3 0m	2	2	5	0	0%	6	4	61-70%	0	5	bollards	0	5	2	31-40%	0
65	Addy Dr	Sheffield	Netherthorpe buffer	18	0	0%	n/a	1-10	3 0m	2	2	0	0	n/a	4	1	21-30%	0	0	n/a	0	0	0	n/a	0
66	Rosa Rd	Sheffield	Netherthorpe buffer	20	20	100%	n/a	0	3m+	2	3	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
67	Leamington St	Sheffield	Netherthorpe buffer	34	32	76-99%	101-150m	1-10	3m+	1	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
68	Upperthorpe Rd	Sheffield	Netherthorpe buffer	10	0	0%	201-250m	51-100	3m+	2	2	0	0	n/a	8	8	100%	1	2	wall	0	4	4	100%	0
69	Brandreth Rd	Sheffield	Netherthorpe buffer	18	18	100%	n/a	1-10	3 0m	2	2	0	0	n/a	2	2	100%	0	1	wall	1	0	0	n/a	0
70	Daniel Hill Terr	Sheffield	Netherthorpe buffer	18	17	76-99%	n/a	1-10	3 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
71	Daniel Hill Walk	Sheffield	Netherthorpe buffer	22	17	76-99%	76-100m	11-20	1 5m	2	2	1	0	0%	4	1	21-30%	0	0	n/a	0	1	0	0%	0
72	Cleveland St	Sheffield	Netherthorpe buffer	33	24	51-75%	41-50m	21-30	3 0m	3	1	0	0	n/a	4	4	100%	2	26	bollards	0	0	0	n/a	0
73	Westmoreland St	Sheffield	Netherthorpe buffer	29	29	100%	51-75m	1-10	3 0m	3	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
74	Philadelphia Gdns	Sheffield	Netherthorpe buffer	27	14	51-75%	41-50m	51-100	3 0m	1	4	0	0	n/a	6	4	61-70%	0	0	n/a	0	0	0	n/a	0
75	Philadelphia Grove	Sheffield	Netherthorpe buffer	15	12	76-99%	n/a	11-20	3 0m	1	3	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
76	Philadelphia Dr	Sheffield	Netherthorpe buffer	17	15	76-99%	n/a	1-10	3 0m	1	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0

Unq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_active_front	Q4_dist_bwn_junc	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bins gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
77	Albert Terrace Rd	Sheffield	Netherthorpe buffer	25	12	26-50%	31-40m	31-50	3 0m	1	2	0	0	-n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
78	Infirmary Rd	Sheffield	Netherthorpe buffer	28	17	51-75%	11-20m	101-200	3m+	1	1	1	1	100%	14	14	100%	0	0	n/a	5	6	4	61-70%	0
79	Gilpin St	Sheffield	Netherthorpe buffer	9	0	0%	76-100m	0	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
80	Portland St	Sheffield	Netherthorpe buffer	11	1	0-25%	101-150m	11-20	3 0m	2	3	0	0	n/a	4	4	100%	0	1	wall	0	0	0	n/a	0
81	Cross Rd	Sheffield	Netherthorpe buffer	7	1	0-25%	76-100m	1-10	3m+	3	2	0	0	n/a	2	2	100%	0	1	wall	0	0	0	n/a	0
82	Bedford St	Sheffield	Netherthorpe buffer	10	8	76-99%	76-100m	1-10	3 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
83	Montgomery Terr Rd	Sheffield	Netherthorpe buffer	8	2	0-25%	21-30m	21-30	3 0m	2	1	0	0	n/a	4	4	100%	0	1	wall	0	1	0	0%	1
84	Malinda St	Sheffield	Netherthorpe buffer	30	23	76-99%	41-50m	1-10	3 0m	2	2	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
85	St. Philip's Rd	Sheffield	Netherthorpe buffer	38	22	51-75%	76-100m	51-100	3 0m	3	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
86	St. Philip's Lane	Sheffield	Netherthorpe buffer	8	8	100%	n/a	51-100	n/a	-1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
87	Watery Street (rest)	Sheffield	Netherthorpe buffer	10	6	51-75%	21-30m	31-50	3 0m	3	2	0	0	n/a	2	2	100%	0	1	wall	0	2	2	100%	0
88	Henry St	Sheffield	Netherthorpe buffer	7	0	0%	31-40m	0	3 0m	4	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
89	Sudbury St	Sheffield	Netherthorpe buffer	5	0	0%	31-40m	1-10	2 0m	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
90	Springvale Walk	Sheffield	Netherthorpe buffer	25	16	51-75%	41-50m	1-10	3m+	2	2	1	1	100%	0	0	n/a	0	0	n/a	0	0	0	n/a	0
91	Oxford St	Sheffield	Netherthorpe buffer	35	19	51-75%	101-150m	101-200	2 5m	3	3	2	1	41-50%	2	0	0%	1	2	wall/steps	0	0	0	n/a	0
92	Tay St	Sheffield	Netherthorpe buffer	2	0	0%	41-50m	1-10	3 0m	3	3	0	0	n/a	2	0	0%	0	1	wall	0	0	0	n/a	0
93	Yeoman's Rd	Sheffield	Netherthorpe buffer	10	10	100%	n/a	21-30	3 0m	3	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
94	Brandreth Close	Sheffield	Netherthorpe buffer	7	5	51-75%	n/a	11-20	1 0m	3	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
95	Vicar Lane	Sheffield	Netherthorpe buffer	5	0	0%	41-50m	0	2 5m	-1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
96	Campo Lane	Sheffield	Netherthorpe buffer	20	12	51-75%	101-150m	1-10	3m+	2	2	1	0	0%	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
97	Shalesmoor	Sheffield	Netherthorpe buffer	7	5	51-75%	31-40m	11-20	3m+	2	3	0	0	n/a	10	9	81-90%	0	0	n/a	0	3	2	61-70%	0
98	Dun Fields	Sheffield	Netherthorpe buffer	10	2	0-25%	41-50m	1-10	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
99	Morpeth St	Sheffield	Netherthorpe buffer	4	0	0%	76-100m	1-10	3m+	2	3	0	0	n/a	2	2	100%	0	0	n/a	1	0	0	n/a	0
100	Upper Allen St	Sheffield	Netherthorpe buffer	20	0	0%	76-100m	21-30	3 0m	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
101	Bowling Green St	Sheffield	Netherthorpe buffer	7	1	0-25%	51-75m	1-10	3 0m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
102	Alma St	Sheffield	Netherthorpe buffer	13	1	0-25%	76-100m	0	2 0m	4	1	0	0	n/a	4	1	21-30%	0	0	n/a	0	0	0	n/a	0
103	Katharn Island	Sheffield	Netherthorpe buffer	5	0	0%	n/a	31-50	2 0m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
104	Green Lane	Sheffield	Netherthorpe buffer	10	0	0%	11-20m	0	3 0m	3	2	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	1
105	Gibraltar St	Sheffield	Netherthorpe buffer	7	2	26-50%	11-20m	1-10	3m+	4	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
106	Bower Spring	Sheffield	Netherthorpe buffer	5	1	0-25%	21-30m	1-10	3m+	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
107	Spring St	Sheffield	Netherthorpe buffer	5	0	0%	11-20m	1-10	3 0m	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
108	Water St	Sheffield	Netherthorpe buffer	4	0	0%	51-75m	0	n/a	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	3	0	0	n/a	0
109	Bower St	Sheffield	Netherthorpe buffer	3	0	0%	76-100m	1-10	3 0m	4	3	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
110	Cotton St	Sheffield	Netherthorpe buffer	8	0	0%	301-400m	0	2 0m	3	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
111	Cotton Mill Row	Sheffield	Netherthorpe buffer	6	0	0%	301-400m	0	2 0m	3	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
112	Corporation St	Sheffield	Netherthorpe buffer	20	4	0-25%	151-200m	1-10	3m+	3	2	1	0	0%	6	4	61-70%	0	0	n/a	0	0	0	n/a	1
113	Bridge St	Sheffield	Netherthorpe buffer	14	2	0-25%	101-150m	1-10	3m+	2	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
114	Plum Street	Sheffield	Netherthorpe buffer	4	0	0%	151-200m	0	1 5m	4	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
115	Love Street	Sheffield	Netherthorpe buffer	7	1	0-25%	401-500m	21-30	3 0m	3	1	0	0	n/a	2	0	0%	0	1	wall	0	0	0	n/a	0
116	North Church St	Sheffield	Netherthorpe buffer	4	0	0%	151-200m	0	3 0m	3	2	0	0	n/a	8	6	71-80%	0	1	wall	0	0	0	n/a	0
117	Nursery St	Sheffield	Netherthorpe buffer	6	1	0-25%	251-300m	21-30	3 0m	2	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
118	West Bar	Sheffield	Netherthorpe buffer	17	3	0-25%	151-200m	11-20	3m+	2	2	0	0	n/a	4	4	100%	0	1	wall	3	3	1	31-40%	0
119	Lambert St	Sheffield	Netherthorpe buffer	10	2	0-25%	251-300m	1-10	2 0m	4	3	0	0	n/a	2	0	0%	0	0	n/a	0	1	0	0%	0
120	Furnace Hill	Sheffield	Netherthorpe buffer	10	2	0-25%	101-150m	11-20	3 0m	3	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
121	Copper St	Sheffield	Netherthorpe buffer	8	1	0-25%	151-200m	1-10	2 0m	4	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
122	Trinity St	Sheffield	Netherthorpe buffer	10	0	0%	301-400m	1-10	2 0m	4	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
123	Scotland St	Sheffield	Netherthorpe buffer	16	3	0-25%	151-200m	1-10	3m+	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	2	2	0	0%	0
124	Snow Lane	Sheffield	Netherthorpe buffer	17	1	0-25%	201-250m	11-20	1 0m	4	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
125	Smithfield	Sheffield	Netherthorpe buffer	11	0	0%	251-300m	31-50	3 0m	4	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
126	Martin St	Sheffield	Netherthorpe buffer	15	6	26-50%	401-500m	31-50	3m+	3	4	0	0	n/a	2	0	0%	8	6	wall	0	0	0	n/a	0
127	Cross Smithfield	Sheffield	Netherthorpe buffer	6	2	26-50%	101-150m	1-10	2 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
128	Allen St	Sheffield	Netherthorpe buffer	10	0	0%	31-40m	1-10	3 0m	3	1	0	0	n/a	4	0	0%	0	1	wall	0	0	0	n/a	0
129	Shepherd St	Sheffield	Netherthorpe buffer	12	0	0%	31-40m	1-10	3m+	3	1	0	0	n/a	4	1	21-30%	0	0	n/a	2	0	0	n/a	0
130	Ellis St	Sheffield	Netherthorpe buffer	2	0	0%	101-150m	1-10	3m+	3	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
131	Matw St	Sheffield	Netherthorpe buffer	5	0	0%	41-50m	1-10	2 0m	3	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
132	Doncaster St	Sheffield	Netherthorpe buffer	7	0	0%	41-50m	0	3m+	2	3	0	0	n/a	4	1	21-30%	0	0	n/a	1	1	0	0%	0
133	Ebenezer St	Sheffield	Netherthorpe buffer	4	1	0-25%	76-100m	0	n/a	-1	2	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
134	Acorn St	Sheffield	Netherthorpe buffer	5	1	0-25%	n/a	0	3 0m	3	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
135	Well Meadow St	Sheffield	Netherthorpe buffer	2	0	0%	n/a	1-10	3 0m	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
136	Brownell St	Sheffield	Netherthorpe buffer	4	0	0%	n/a	1-10	3 0m	3	1	1	0	0%	2	2	100%	0	0	n/a	0	0	0	n/a	0
137	Radford St	Sheffield	Netherthorpe buffer	3	0	0%	n/a	1-10	2 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
138	Leicester Walk	Sheffield	Netherthorpe buffer	2	1	26-50%	n/a	0	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
139	St. George's Cl	Sheffield	Netherthorpe buffer	50	45	76-99%	n/a	31-50	3 0m	3	3	3	3	31-40%	4	3	71-80%	0	1	wall	0	0	0	n/a	0
140	Brook Lane	Sheffield	Netherthorpe buffer	5	3	51-75%	76-100m	1-10	3 0m	3	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
141	Best St	Sheffield	Netherthorpe buffer	5	3	51-75%	76-100m	11-20	3 0m	2	2	0	0	n/a	8	4	41-50%	0	0	n/a	0	0	0	n/a	0
142	Edward St Flats	Sheffield	Netherthorpe buffer	100	100	100%	n/a	21-30	n/a	-1	3	2	1	41-50%	0	0	n/a	8	1	n/a	0	0	0	n/a	0
143	Edward St	Sheffield	Netherthorpe buffer	14	1	0-25%	76-100m	11-20	3m+	2	2	2	0	0%	8	3	31-40%	3	0	n/a	0	0	0	n/a	0
144	Brocco St	Sheffield	Netherthorpe buffer	10	0	0%	41-50m	1-10	3 0m	4	2	0	0	n/a	6	2	31-40%	0	0	n/a	0	0	0	n/a	0
145	Solly St	Sheffield	Netherthorpe buffer	24	13	51-75%	151-200m	1-10	3 0m	2	3	0	0	n/a	4	2	41-50%	0	1	wall	0	0	0	n/a	0
146	Siddall St	Sheffield	Netherthorpe buffer	4	1	0-25%	21-30m	11-20	3 0m	3	1	0	0	n/a	8	3	31-40%	0	1	wall	0	0	0	n/a	0
147	Garden St	Sheffield	Netherthorpe buffer	20	0	0%	401-500m	1-10	3 0m	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
148	LeavyGreave St	Sheffield	Netherthorpe buffer	4	1	0-25%	76-100m	21-30	3 0m	3	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
149	Paradise St	Sheffield	Netherthorpe buffer	23	0	0%	11-20m	0	3m+	2	1	0	0	n/a	2	0	0%	0	1	wall	1	0	0	n/a	0
150	Lee Croft	Sheffield	Netherthorpe buffer	7	2	26-50%	21-30m	1-10	3m+	2	2	0	0	n/a	2	1	41-50%	0	1	wall	0	0	0	n/a	0
151	Sims St	Sheffield	Netherthorpe buffer	2	0	0%	n/a	1-10	3m+	3	2	0	0	n/a	2	0	0%	0	1	wall	0	0	0	n/a	0
152	Hawley St	Sheffield	Netherthorpe buffer	14	12	76-99%	401-500m	11-20	3m+	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0

Uasq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xge	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bmss gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
153	Townhead St	Sheffield	Netherthorpe buffer	14	7	26-50%	201-250m	1-10	3m+	3	2	0	0	n/a	6	4	61-70%	0	0	n/a	0	1	0	0%	0
154	Broad Lane	Sheffield	Netherthorpe buffer	34	6	0-25%	51-75m	31-50	3m+	2	2	0	0	n/a	18	12	61-70%	1	1	wall	0	4	2	41-50%	church
155	Trippet Lane	Sheffield	Netherthorpe buffer	22	12	51-75%	101-150m	1-10	3m+	2	2	0	0	n/a	10	8	71-80%	0	0	n/a	0	0	0	n/a	0
156	Bailey Lane	Sheffield	Netherthorpe buffer	15	3	0-25%	301-400m	1-10	3m+	3	2	26	12	41-50%	0	0	n/a	0	0	n/a	0	0	0	n/a	0
157	Bailey St	Sheffield	Netherthorpe buffer	14	2	0-25%	301-400m	1-10	3 0m	2	2	0	0	n/a	14	4	21-30%	0	0	n/a	0	0	0	n/a	0
158	Rockingham St	Sheffield	Netherthorpe buffer	14	2	0-25%	151-200m	1-10	3m+	2	2	0	0	n/a	12	8	61-70%	0	0	n/a	0	1	0	0%	0
159	West St (part)	Sheffield	Netherthorpe buffer	35	34	76-99%	76-100m	0	3m+	1	2	0	0	n/a	20	20	100%	0	0	n/a	0	6	4	61-70%	0
160	Newcastle St	Sheffield	Netherthorpe buffer	5	0	0%	301-400m	1-10	3 0m	2	1	0	0	n/a	8	4	41-50%	0	0	n/a	0	0	0	n/a	0
161	Portobello St	Sheffield	Netherthorpe buffer	12	1	0-25%	n/a	11-20	3m+	1	1	0	0	n/a	12	5	41-50%	0	1	wall	0	0	0	n/a	church
162	Holland St	Sheffield	Netherthorpe buffer	2	0	0%	251-300m	0	3 0m	3	2	0	0	n/a	6	0	0%	0	0	n/a	0	0	0	n/a	0
163	Mappin St	Sheffield	Netherthorpe buffer	13	6	26-50%	76-100m	11-20	3m+	1	1	0	0	n/a	14	12	81-90%	2	1	steps	0	1	0	0%	uni bldg & church
164	Orange St	Sheffield	Netherthorpe buffer	5	1	0-25%	21-30m	1-10	2 5m	2	1	0	0	n/a	8	3	31-40%	0	0	n/a	0	0	0	n/a	0
165	Pitt St	Sheffield	Netherthorpe buffer	6	1	0-25%	51-75m	0	3 0m	3	1	0	0	n/a	8	5	61-70%	0	0	n/a	0	0	0	n/a	0
166	Regent Street	Sheffield	Netherthorpe buffer	4	1	0-25%	76-100m	1-10	3m+	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
167	Fitzwilliam St	Sheffield	Netherthorpe buffer	4	0	0%	151-200m	31-50	3m+	2	2	0	0	n/a	6	6	100%	1	2	mixture of 2+	0	0	0	n/a	park/ grn space
168	George's Terrace	Sheffield	Netherthorpe buffer	2	0	0%	201-250m	11-20	3m+	2	1	0	0	n/a	4	3	71-80%	0	1	wall	0	0	0	n/a	church
169	Broomhall St	Sheffield	Netherthorpe buffer	4	0	0%	31-40m	11-20	3m+	1	1	0	0	n/a	4	4	100%	0	1	wall	0	0	0	n/a	0
170	Gell St	Sheffield	Netherthorpe buffer	28	16	51-75%	251-300m	51-100	3 0m	2	2	0	0	n/a	6	4	61-70%	5	4	mixture of 2+	0	1	0	0%	park
171	Cavendish St	Sheffield	Netherthorpe buffer	6	0	0%	301-400m	1-10	3m+	2	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
172	Bolton St	Sheffield	Netherthorpe buffer	7	1	0-25%	151-200m	1-10	3m+	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
173	Wilkinson St	Sheffield	Netherthorpe buffer	54	41	51-75%	n/a	51-100	3 0m	3	1	0	0	n/a	2	2	100%	0	1	wall	2	0	0	n/a	0
174	Conwy St	Sheffield	Netherthorpe buffer	8	5	51-75%	n/a	1-10	2 5m	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
175	Broomspring Lane	Sheffield	Netherthorpe buffer	57	45	51-75%	41-50m	51-100	3 0m	3	2	1	1	100%	12	12	100%	5	1	wall	4	0	0	n/a	0
176	Devonshire St	Sheffield	Netherthorpe buffer	16	16	100%	151-200m	11-20	3m+	1	1	0	0	n/a	4	4	100%	0	1	n/a	0	0	0	n/a	park
177	Regent Terrace	Sheffield	Netherthorpe buffer	9	3	26-50%	301-400m	0	2 0m	2	1	0	0	n/a	4	4	100%	0	1	steps	0	0	0	n/a	0
178	Leavy Greave Rd	Sheffield	Netherthorpe buffer	8	2	0-25%	76-100m	1-10	3m+	3	1	0	0	n/a	8	3	31-40%	0	0	n/a	0	0	0	n/a	1
179	Crookes Valley Rd	Sheffield	Netherthorpe buffer	10	10	100%	76-100m	300+	3m+	1	3	1	0	0%	10	9	81-90%	25	14	mixture of 2+	0	2	2	100%	1
180	Eldon St	Sheffield	Netherthorpe buffer	7	0	0%	51-75m	11-20	3m+	2	1	0	0	n/a	4	4	100%	0	1	low fence	0	0	0	n/a	0
181	Glossop Rd	Sheffield	Netherthorpe buffer	54	29	51-75%	41-50m	31-50	3m+	2	1	0	0	n/a	8	8	100%	0	1	wall	0	3	3	100%	church/ hosp
182	Brunswick St	Sheffield	Netherthorpe buffer	50	46	76-99%	11-20m	1-10	3 0m	2	2	0	0	n/a	6	4	61-70%	0	0	n/a	3	0	0	n/a	0
183	Filey St	Sheffield	Netherthorpe buffer	52	49	76-99%	101-150m	21-30	3 0m	3	1	0	0	n/a	8	4	41-50%	0	0	n/a	2	0	0	n/a	0
184	Gloucester St	Sheffield	Netherthorpe buffer	35	25	51-75%	76-100m	11-20	3 0m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	15	0	0	n/a	0
185	Havelock St	Sheffield	Netherthorpe buffer	26	25	76-99%	41-50m	21-30	3 0m	2	2	1	1	100%	4	0	0%	4	2	mixture of 2+	0	0	0	n/a	0
186	Holberry Close	Sheffield	Netherthorpe buffer	20	18	76-99%	21-30m	1-10	3 0m	3	2	0	0	0%	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
187	Holberry Gardens	Sheffield	Netherthorpe buffer	15	12	76-99%	21-30m	11-20	3m+	2	1	0	0	n/a	2	0	0%	6	1	wall	1	0	0	n/a	0
188	Dorset St	Sheffield	Netherthorpe buffer	33	16	26-50%	11-20m	21-30	3 0m	3	1	1	0	0%	2	0	0%	0	0	n/a	0	0	0	n/a	0
189	Ruth Square	Sheffield	Netherthorpe buffer	26	24	76-99%	n/a	0	3m+	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
190	Broomfield Rd	Sheffield	Netherthorpe buffer	9	1	0-25%	151-200m	51-100	3m+	3	1	0	0	n/a	6	4	61-70%	0	0	n/a	0	0	0	n/a	church/ hosp
191	Beech Hill Rd	Sheffield	Netherthorpe buffer	39	17	26-50%	151-200m	51-100	3 0m	2	1	0	0	n/a	16	8	41-50%	0	3	wall	0	1	1	100%	1
192	Watson Rd	Sheffield	Netherthorpe buffer	32	21	51-75%	301-400m	31-50	3 0m	2	1	0	0	n/a	4	1	21-30%	0	0	n/a	0	0	0	n/a	0
193	Hounsfield Rd	Sheffield	Netherthorpe buffer	8	6	51-75%	n/a	1-10	3m+	1	1	1	1	100%	2	2	100%	0	1	steps	0	1	1	100%	0
194	Claremont Cresc	Sheffield	Netherthorpe buffer	12	10	76-99%	101-150m	11-20	3 0m	3	2	0	0	n/a	2	2	100%	0	1	wall	0	0	0	n/a	hosp
195	Damer St	Sheffield	Netherthorpe buffer	2	0	0%	41-50m	11-20	3 0m	2	1	0	0	n/a	2	2	100%	0	1	wall	0	0	0	n/a	hosp
196	Upper Hanover Way/ Hanover Way	Sheffield	Netherthorpe buffer	0	0	0%	301-400m	51-100	3m+	1	2	0	0	n/a	8	8	100%	0	1	wall	0	2	2	100%	2
197	Claremont Place	Sheffield	Netherthorpe buffer	7	5	51-75%	41-50m	11-20	3 0m	2	2	0	0	n/a	4	3	71-80%	0	1	wall	0	0	0	n/a	hosp
198	Shearwood Rd	Sheffield	Netherthorpe buffer	5	3	51-75%	n/a	1-10	3 0m	1	2	0	0	n/a	2	0	0%	0	1	wall	1	0	0	n/a	0
199	Palmerston Rd	Sheffield	Netherthorpe buffer	10	8	76-99%	76-100m	31-50	3 0m	2	3	0	0	n/a	4	3	71-80%	0	3	wall	0	0	0	n/a	0
200	Hoyle St	Sheffield	Netherthorpe buffer	3	0	0%	21-30m	0	3 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
201	Durham Rd	Sheffield	Netherthorpe buffer	4	0	0%	76-100m	21-30	3 0m	2	2	0	0	n/a	6	6	100%	1	2	wall	0	0	0	n/a	uni tower
202	Clarkson St	Sheffield	Netherthorpe buffer	8	3	26-50%	76-100m	21-30	3m+	2	1	0	0	n/a	8	8	100%	1	1	wall	0	0	0	n/a	uni tower
203	Newbould Lane	Sheffield	Netherthorpe buffer	29	22	76-99%	76-100m	21-30	3 0m	2	1	0	0	n/a	6	2	31-40%	0	0	n/a	0	2	1	41-50%	0
204	Hands Rd	Sheffield	Netherthorpe buffer	36	30	76-99%	201-250m	1-10	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
205	Upperthorpe	Sheffield	Netherthorpe buffer	49	44	76-99%	151-200m	101-200	3m+	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	1	1	0	0%	0
206	Barber Place	Sheffield	Netherthorpe buffer	16	12	51-75%	n/a	1-10	0 5m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
207	Victoria St	Sheffield	Netherthorpe buffer	20	10	26-50%	201-250m	21-30	3m+	2	1	0	0	n/a	8	5	61-70%	0	1	steps	0	0	0	n/a	church
208	Adelphi St	Sheffield	Netherthorpe buffer	13	4	26-50%	151-200m	11-20	3m+	3	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
209	Martin Close	Sheffield	Netherthorpe buffer	13	12	76-99%	n/a	1-10	3m+	1	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
210	Shipton St	Sheffield	Netherthorpe buffer	3	1	26-50%	151-200m	1-10	3m+	1	2	0	0	n/a	4	4	100%	0	1	wall	0	1	0	0%	0
211	Burlington St	Sheffield	Netherthorpe buffer	7	2	26-50%	n/a	1-10	3m+	2	2	0	0	n/a	2	1	41-50%	0	1	wall	0	0	0	n/a	0
212	Midvale Ave	Sheffield	Netherthorpe buffer	8	5	51-75%	n/a	11-20	3m+	1	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
213	Lock St	Sheffield	Netherthorpe buffer	5	0	0%	n/a	1-10	3 0m	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
214	Penistone Rd	Sheffield	Netherthorpe buffer	17	0	0%	401-500m	31-50	3m+	2	1	0	0	n/a	10	10	100%	0	1	wall	0	3	2	61-70%	0
215	Rutland Rd	Sheffield	Netherthorpe buffer	5	0	0%	n/a	11-20	3m+	2	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
216	Dixon St	Sheffield	Netherthorpe buffer	4	0	0%	151-200m	1-10	3 0m	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
217	Cornish St	Sheffield	Netherthorpe buffer	15	2	0-25%	76-100m	11-20	3 0m	3	1	0	0	n/a	6	4	61-70%	0	0	n/a	0	0	0	n/a	0
218	Green Lane	Sheffield	Netherthorpe buffer	13	1	0%	76-100m	1-10	3m+	2	1	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
219	Dun St	Sheffield	Netherthorpe buffer	3	0	0%	n/a	1-10	3 0m	2	1	0	0	n/a	2	1	51-60%	0	0	n/a	0	0	0	n/a	0
220	Ball Lane	Sheffield	Netherthorpe buffer	10	3	26-50%	251-300m	11-20	3 0m	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
221	Mowbray St	Sheffield	Netherthorpe buffer	16	3	0-25%	251-300m	0	3m+	2	3	0	0	n/a	4	2	41-50%	0	0	n/a	1	2	0	0%	0
222	Neepsend Lane	Sheffield	Netherthorpe buffer	11	0	0%	51-75m	1-10	3m+	1	2	0	0	n/a	2	0	0%	0	0	n/a	0	1	0	0%	0
223	Burton Rd	Sheffield	Netherthorpe buffer	14	5	26-50%	51-75m	1-10	3m+	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	1	0	0%	0
224	Lancaster St	Sheffield	Netherthorpe buffer	5	0	0%	21-30m	0	3m+	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
225	Percy St	Sheffield	Netherthorpe buffer	7	1	0-25%	51-75m	1-10	3m+	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
226	Queen St	Sheffield	Netherthorpe buffer	11	5	26-50%	41-50m	0	3m+	2	3	0	0	n/a	10	6	51-60%	0	1	wall	0	1	0	0%	0
227	Silver St	Sheffield	Netherthorpe buffer	6	0	0%	51-75m	0	3 0m	3	2	0	0	n/a	4	2	41-50%	0	4	bollards	0	0	0	n/a	0
228	West Bar Green	Sheffield	Netherthorpe buffer	10	0	0%	401-500m	1-10	3m+	3	2	0	0	n/a	8	7	81-90%	0	2	mixture of 2+	0	0	0	n/a	0

Unique_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active_front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bus gdns	Q16_no_bussstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
229	Tenter St	Sheffield	Netherthorpe buffer	6	1	0-25%	76-100m	1-10	3m+	3	1	0	0	n/a	8	7	81-90%	0	1	wall	0	0	0	n/a	0
230	White Croft	Sheffield	Netherthorpe buffer	4	1	0-25%	401-500m	1-10	1 0m	3	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
231	Hollis Croft	Sheffield	Netherthorpe buffer	5	1	0-25%	401-500m	11-20	3m+	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
232	Blue Boy St	Sheffield	Netherthorpe buffer	5	0	0%	151-200m	0	3 0m	3	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
233	Walkley Road	Sheffield	Walkley	64	62	76-99%	401-500m	11-20	2 5m	1	3	1	0	0%	5	4	71-80%	0	1	wall	0	3	0	0%	0
234	Palm Street	Sheffield	Walkley	38	32	76-99%	151-200m	11-20	1 5m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
235	Palm Lane	Sheffield	Walkley	5	5	100%	101-150m	0	2 0m	1	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
236	South Road	Sheffield	Walkley	52	41	76-99%	101-150m	1-10	3 0m	2	2	0	0	n/a	12	12	100%	3	2	wall	0	5	0	0%	library
237	Freedom Road	Sheffield	Walkley	146	125	76-99%	401-500m	21-30	2 0m	3	1	0	0	n/a	8	4	61-70%	0	0	n/a	1	0	0	n/a	0
238	Carr Road	Sheffield	Walkley	79	62	76-99%	401-500m	31-50	2 0m	3	1	0	0	n/a	4	3	61-70%	0	0	n/a	0	4	0	0%	0
239	Industry Street	Sheffield	Walkley	162	125	76-99%	301-400m	21-30	2 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	1	0	0	n/a	0
240	Hoole Street	Sheffield	Walkley	115	85	51-75%	301-400m	11-20	2 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
241	Cundy Street	Sheffield	Walkley	108	95	76-99%	301-400m	11-20	3 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
242	Walkley Street	Sheffield	Walkley	36	32	76-99%	76-100m	11-20	1 5m	2	2	0	0	n/a	5	5	100%	0	0	n/a	0	0	0	n/a	0
243	Hadfield Street (E)	Sheffield	Walkley	30	26	76-99%	151-200m	1-10	3 0m	3	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
244	Burgoyne Street	Sheffield	Walkley	61	52	76-99%	401-500m	51-100	3m+	2	3	0	0	n/a	4	4	100%	0	0	n/a	0	3	3	100%	0
245	Whitehouse Road	Sheffield	Walkley	33	21	76-99%	76-100m	31-50	3m+	3	2	0	0	n/a	12	10	81-90%	0	0	n/a	1	0	0	n/a	0
246	Whitehouse Lane	Sheffield	Walkley	40	36	76-99%	101-150m	31-50	3m+	2	2	0	0	n/a	6	6	100%	0	0	n/a	0	2	1	41-50%	0
247	Tennyson Road	Sheffield	Walkley	40	36	76-99%	151-200m	1-10	3m+	3	2	0	0	n/a	4	3	61-70%	1	0	n/a	0	0	0	n/a	0
248	Hawksworth Road	Sheffield	Walkley	64	60	76-99%	151-200m	1-10	3m+	3	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
249	Exley Avenue	Sheffield	Walkley	38	36	76-99%	n/a	1-10	3m+	3	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
250	King James St	Sheffield	Walkley buffer	3	0	0%	n/a	21-30	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
251	Creswick St	Sheffield	Walkley buffer	1	0	0%	n/a	11-20	3m+	3	3	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
252	Somerville Terr	Sheffield	Walkley buffer	24	18	76-99%	n/a	1-10	3m+	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
253	Burgoyne Close	Sheffield	Walkley buffer	18	16	76-99%	n/a	11-20	3 0m	3	3	1	31-40%	2	0	0%	0	0	n/a	0	0	0	n/a	0
254	Walkley Road	Sheffield	Walkley buffer	23	18	76-99%	251-300m	1-10	1 5m	2	2	2	0	0%	4	0	0%	0	1	wall	1	3	0	0%	0
255	Hammerton Road	Sheffield	Walkley buffer	28	27	76-99%	251-300m	1-10	3 0m	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
256	Bole Hill Road	Sheffield	Walkley buffer	57	46	76-99%	301-400m	51-100	3 0m	3	2	0	0	n/a	5	2	31-40%	1	1	wall	0	4	3	71-80%	pub
257	Rivelin Street	Sheffield	Walkley buffer	14	9	51-75%	151-200m	1-10	3 0m	2	2	0	0	n/a	2	1	41-50%	1	0	n/a	0	1	1	100%	0
258	Bellhagg Road	Sheffield	Walkley buffer	121	98	76-99%	301-400m	51-100	3 0m	3	1	0	0	n/a	6	2	21-30%	3	3	wall	0	0	0	n/a	0
259	Compton Street	Sheffield	Walkley buffer	34	29	76-99%	301-400m	1-10	2 0m	3	1	0	0	n/a	4	2	41-50%	0	0	n/a	1	0	0	n/a	0
260	Parsonage Crescent	Sheffield	Walkley buffer	20	16	76-99%	201-250m	1-10	3 0m	2	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
261	Providence Rd	Sheffield	Walkley buffer	109	92	76-99%	151-200m	11-20	3 0m	3	2	0	0	n/a	8	5	61-70%	0	0	n/a	0	0	0	n/a	0
262	Walkley Bank Rd	Sheffield	Walkley buffer	77	57	51-75%	301-400m	300+	3 0m	3	1	6	3	41-50%	6	4	61-70%	0	1	wall	1	0	0	n/a	0
263	Morley Street	Sheffield	Walkley buffer	83	61	51-75%	401-500m	101-200	3 0m	2	2	0	0	n/a	4	4	100%	0	2	wall	0	0	0	n/a	0
264	Rivelin Bank	Sheffield	Walkley buffer	24	20	76-99%	301-400m	11-20	2 0m	3	2	0	0	n/a	2	0	0%	0	1	wall	0	0	0	n/a	0
265	Walkley Lane	Sheffield	Walkley buffer	65	50	76-99%	151-200m	11-20	2 5m	3	2	0	0	n/a	14	11	71-80%	0	2	bollards	1	5	1	11-20%	0
266	Bessingby Road	Sheffield	Walkley buffer	38	38	100%	301-400m	11-20	2 5m	4	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
267	Carnaby Rd	Sheffield	Walkley buffer	80	80	100%	n/a	21-30	3 0m	3	3	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
268	Bowness Rd	Sheffield	Walkley buffer	60	60	100%	301-400m	21-30	2 5m	4	2	0	0	n/a	6	3	41-50%	0	0	n/a	0	0	0	n/a	0
269	Lonsdale Rd	Sheffield	Walkley buffer	53	48	76-99%	301-400m	1-10	3 0m	4	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
270	Kirkstone Rd	Sheffield	Walkley buffer	80	80	100%	n/a	1-10	3m+	3	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
271	Singleton Rd	Sheffield	Walkley buffer	42	42	100%	201-250m	1-10	3 0m	2	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
272	Manvers Rd	Sheffield	Walkley buffer	50	44	76-99%	n/a	1-10	3 0m	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
273	Ripley Street	Sheffield	Walkley buffer	18	11	51-75%	76-100m	11-20	3 0m	2	2	0	0	n/a	4	3	71-80%	0	0	n/a	0	1	0	0%	0
274	Thoresby Rd	Sheffield	Walkley buffer	81	81	100%	n/a	21-30	3 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
275	Forbes Rd	Sheffield	Walkley buffer	4	0	0%	251-300m	11-20	3 0m	2	2	0	0	n/a	4	4	100%	0	0	n/a	0	1	1	100%	church
276	Watersmeet Rd	Sheffield	Walkley buffer	68	59	76-99%	n/a	51-100	3 0m	3	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
277	Ped path Watersmeet- Thoresby	Sheffield	Walkley buffer	0	0	0%	n/a	51-100	2 0m	1	3	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
278	Tinckett Rd	Sheffield	Walkley buffer	80	80	100%	401-500m	11-20	3 0m	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
279	Lark Street	Sheffield	Walkley buffer	4	0	0%	251-300m	1-10	2 5m	3	3	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
280	Linaker Street	Sheffield	Walkley buffer	20	16	76-99%	301-400m	1-10	2 5m	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
281	Thrush Street	Sheffield	Walkley buffer	25	21	76-99%	251-300m	1-10	2 5m	2	1	0	0	n/a	4	1	21-30%	0	0	n/a	0	0	0	n/a	0
282	Northfield Rd	Sheffield	Walkley buffer	45	37	76-99%	76-100m	11-20	3m+	1	3	0	0	n/a	12	12	100%	0	1	wall	0	5	4	71-80%	0
283	Northfield Ave	Sheffield	Walkley buffer	16	13	76-99%	n/a	11-20	3m+	3	3	1	0	0%	2	2	100%	0	0	n/a	0	0	0	n/a	0
284	Western Road	Sheffield	Walkley buffer	90	83	76-99%	251-300m	11-20	3 0m	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
285	Longfield Rd	Sheffield	Walkley buffer	80	80	100%	n/a	0	3m+	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
286	Loxley View Rd	Sheffield	Walkley buffer	80	80	100%	n/a	0	3m+	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
287	Netherfield Rd	Sheffield	Walkley buffer	80	80	100%	n/a	1-10	3m+	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
288	Stothard Rd	Sheffield	Walkley buffer	80	80	100%	n/a	11-20	3m+	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
289	Heavygate Rd	Sheffield	Walkley buffer	49	33	51-75%	101-150m	1-10	3 0m	3	2	1	0	0%	5	5	100%	0	2	wall	0	1	1	100%	0
290	Aldred Rd	Sheffield	Walkley buffer	56	52	76-99%	n/a	11-20	3m+	3	1	1	0	0%	2	0	0%	0	0	n/a	1	0	0	n/a	0
291	Matlock Rd	Sheffield	Walkley buffer	28	20	51-75%	101-150m	21-30	3 0m	3	1	0	0	n/a	6	2	31-40%	0	0	n/a	0	0	0	n/a	0
292	Hadfield St	Sheffield	Walkley buffer	50	38	76-99%	401-500m	11-20	3 0m	3	2	0	0	n/a	4	2	41-50%	0	1	wall	0	0	0	n/a	0
293	Cromwell St	Sheffield	Walkley buffer	46	34	51-75%	401-500m	11-20	3 0m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
294	Duncombe St	Sheffield	Walkley buffer	40	34	76-99%	301-400m	1-10	3 0m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
295	Fulton Rd	Sheffield	Walkley buffer	32	19	51-75%	251-300m	11-20	3 0m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
296	Fir Street	Sheffield	Walkley buffer	72	50	51-75%	401-500m	1-10	3 0m	3	1	1	1	100%	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
297	Orchard Rd	Sheffield	Walkley buffer	34	23	51-75%	251-300m	11-20	3 0m	3	1	0	0	n/a	4	0	0%	0	1	wall	0	0	0	n/a	0
298	Parsonage Street	Sheffield	Walkley buffer	29	26	76-99%	401-500m	1-10	3 0m	2	1	1	0	0%	4	2	41-50%	2	0	n/a	0	0	0	n/a	0
299	Fern Rd	Sheffield	Walkley buffer	37	27	51-75%	251-300m	11-20	3 0m	2	1	3	0	0%	4	2	41-50%	0	14	bollards	0	0	0	n/a	0
300	Langsett Rd	Sheffield	Walkley buffer	200	197	76-99%	76-100m	201-300	3 0m	2	1	1	0	0%	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
301	Walkley Crescent Rd	Sheffield	Walkley buffer	97	81	76-99%	401-500m	51-100	3m+	2	1	1	0	0%	6	3	41-50%	0	0	n/a	1	31	31	100%	0
302	Speeton Rd	Sheffield	Walkley buffer	2	0	0%	n/a	1-10	3 0m	3	1	0	0	n/a	2	2	100%	0	0	n/a	1	0	0	n/a	0
303	Limbrick Close	Sheffield	Walkley buffer	3	1	26-50%	n/a	201-300	3m+	2	3	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
304	Limbrick Rd	Sheffield	Walkley buffer	12	6	26-50%	n/a	51-100	3 0m	2	3	0	0	n/a	2	1	41-50%	0	1	wall	0	0	0	n/a	0

Unique_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bins gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
305	Dodd St	Sheffield	Walkley buffer	51	46	76-99%	151-200m	21-30	3 0m	3	3	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
306	Hatton Rd	Sheffield	Walkley buffer	4	0	0%	51-75m	0	3 0m	3	2	0	0	n/a	8	6	71-80%	0	0	n/a	0	0	0	n/a	0
307	Birkendale Rd	Sheffield	Walkley buffer	60	18	26-50%	21-30m	101-200	3m+	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
308	Howard Rd	Sheffield	Walkley buffer	36	24	51-75%	51-75m	101-200	3m+	2	2	0	0	n/a	12	12	100%	0	0	n/a	0	5	2	31-40%	0
309	Welbeck Rd	Sheffield	Walkley buffer	60	38	51-75%	41-50m	51-100	3m+	3	2	1	0	0%	2	1	41-50%	0	0	n/a	1	0	0	n/a	0
310	Welbeck Valley Rd	Sheffield	Walkley buffer	0	0	0%	401-500m	300+	3m+	2	2	0	0	n/a	3	3	100%	0	0	n/a	0	0	0	n/a	0
311	Sinn Street	Sheffield	Walkley buffer	82	78	76-99%	11-20m	11-20	3m+	3	2	0	0	n/a	4	4	100%	0	0	wall	1	0	0	n/a	0
312	Cannon St	Sheffield	Walkley buffer	60	45	51-75%	41-50m	11-20	3m+	3	2	0	0	n/a	8	0	0%	0	0	wall	1	0	0	n/a	0
313	Moorsyde Cresc	Sheffield	Walkley buffer	40	40	100%	31-40m	11-20	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	wall	0	0	0	n/a	0
314	Moorsyde Ave	Sheffield	Walkley buffer	50	40	76-99%	n/a	11-20	3 0m	2	2	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
315	Heavygate Ave	Sheffield	Walkley buffer	96	92	76-99%	151-200m	21-30	3 0m	2	1	2	0	0%	10	10	100%	0	0	wall	0	1	0	0%	0
316	Highton St	Sheffield	Walkley buffer	12	9	51-75%	201-250m	1-10	3 0m	3	2	0	0	n/a	4	4	100%	0	0	wall	0	0	0	n/a	0
317	Greenhow Steet	Sheffield	Walkley buffer	80	50	51-75%	201-250m	11-20	3.0m	3	3	0	0	n/a	2	1	41-50%	0	0	wall	0	0	0	n/a	0
318	Bradley St	Sheffield	Walkley buffer	111	88	76-99%	401-500m	31-50	3m+	2	2	0	0	n/a	4	4	100%	0	1	wall	0	0	0	n/a	0
319	Northfield Cl	Sheffield	Walkley buffer	15	12	76-99%	n/a	21-30	3m+	1	1	0	0	n/a	2	2	100%	1	0	wall	0	0	0	n/a	0
320	Penistone Rd	Sheffield	Walkley buffer	5	0	0%	251-300m	101-200	3m+	2	1	0	0	n/a	2	2	100%	0	1	wall	0	2	0	0%	HydraClarkson bldg
321	Racker Way	Sheffield	Walkley buffer	26	18	51-75%	n/a	51-100	3 0m	3	1	4	0	0%	2	0	41-50%	0	0	wall	0	0	0	n/a	0
322	Lister Rd	Sheffield	Walkley buffer	34	30	76-99%	151-200m	11-20	3m+	3	2	0	0	n/a	4	0	0%	0	0	wall	0	0	0	n/a	0
323	Arnold St	Sheffield	Walkley buffer	5	3	51-75%	n/a	31-50	2 0m	1	1	0	0	n/a	0	0	n/a	0	0	wall	0	0	0	n/a	0
324	Walkley Bank Close	Sheffield	Walkley buffer	16	15	76-99%	n/a	11-20	3 0m	2	1	0	0	n/a	2	0	0%	0	0	wall	0	0	0	n/a	0
325	Walkley Terr	Sheffield	Walkley buffer	17	13	76-99%	101-150m	31-50	3m+	3	1	0	0	n/a	4	0	0%	0	0	wall	0	0	0	n/a	0
326	Robertson Rd	Sheffield	Walkley buffer	73	47	51-75%	51-75m	101-200	3m+	2	1	0	0	n/a	4	0	0%	0	0	wall	0	0	0	n/a	0
327	Robertson Dr	Sheffield	Walkley buffer	26	21	76-99%	n/a	51-100	3m+	2	1	1	1	100%	2	0	0%	0	0	wall	0	0	0	n/a	0
328	Storrs Hall	Sheffield	Walkley buffer	33	18	51-75%	n/a	51-100	3m+	2	1	1	0	0%	2	0	0%	0	1	wall	0	0	0	n/a	0
329	Hawthorne St	Sheffield	Walkley buffer	16	10	51-75%	201-250m	1-10	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	wall	0	0	0	n/a	0
330	Hammerton Cl	Sheffield	Walkley buffer	26	22	76-99%	n/a	21-30	3 0m	3	1	0	0	n/a	2	0	0%	0	0	wall	0	0	0	n/a	0
331	Compton St	Sheffield	Walkley buffer	48	42	76-99%	41-50m	1-10	3 0m	2	2	1	0	0%	4	3	71-80%	0	0	wall	0	0	0	n/a	0
332	Bates St	Sheffield	Walkley buffer	104	100	76-99%	201-250m	11-20	3 0m	3	2	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
333	Townend Rd	Sheffield	Walkley buffer	84	40	26-50%	151-200m	31-50	3m+	2	2	0	0	n/a	6	5	81-90%	0	0	wall	0	0	0	n/a	0
334	Ibbotson Rd	Sheffield	Walkley buffer	50	50	100%	251-300m	1-10	3m+	2	1	0	0	n/a	4	0	0%	0	0	wall	0	0	0	n/a	0
335	Gresham Rd	Sheffield	Walkley buffer	17	16	76-99%	101-150m	1-10	3m+	2	1	0	0	n/a	2	1	41-50%	0	0	wall	0	0	0	n/a	0
336	Stony Way	Sheffield	Walkley buffer	3	0	0%	151-200m	1-10	3m+	3	1	0	0	n/a	0	0	n/a	0	0	wall	0	0	0	n/a	0
337	Woodview Rd	Sheffield	Walkley buffer	45	39	76-99%	n/a	31-50	3 0m	2	1	0	0	n/a	2	0	0%	0	1	wall	0	0	0	n/a	0
338	Elliottville St	Sheffield	Walkley buffer	3	3	100%	76-100m	1-10	2 0m	4	1	0	0	n/a	4	0	0%	0	0	wall	0	0	0	n/a	0
339	River Terr	Sheffield	Walkley buffer	4	0	0%	n/a	21-30	n/a	-1	2	0	0	n/a	0	0	n/a	0	0	wall	0	0	0	n/a	0
340	Springvale Rd	Sheffield	Walkley buffer	95	45	26-50%	101-150m	21-30	3m+	2	1	0	0	n/a	8	8	100%	0	0	wall	0	2	0	0%	0
341	Mona Rd	Sheffield	Walkley buffer	110	105	76-99%	251-300m	11-20	3m+	2	2	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
342	Boyce St	Sheffield	Walkley buffer	48	46	76-99%	76-100m	1-10	3m+	2	2	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
343	Blake St	Sheffield	Walkley buffer	87	83	76-99%	76-100m	1-10	3m+	2	3	0	0	n/a	6	6	100%	0	0	wall	1	0	0	n/a	0
344	Fox Rd	Sheffield	Walkley buffer	10	7	51-75%	51-75m	101-200	3m+	2	2	1	1	100%	0	0	n/a	2	0	wall	0	3	0	0%	0
345	Sherde Rd	Sheffield	Walkley buffer	15	9	51-75%	31-40m	21-30	3 0m	2	3	1	1	100%	2	1	41-50%	0	0	wall	0	1	0	0%	0
346	Bransby St	Sheffield	Walkley buffer	10	7	51-75%	76-100m	1-10	3m+	2	2	0	0	n/a	2	1	41-50%	0	0	wall	0	0	0	n/a	0
347	Daniel Hill Court/ Melbourn Rd	Sheffield	Walkley buffer	20	14	51-75%	n/a	1-10	n/a	2	3	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
348	Melbourn Rd	Sheffield	Walkley buffer	66	64	76-99%	151-200m	11-20	3m+	2	1	0	0	n/a	2	2	100%	0	0	wall	0	0	0	n/a	0
349	Birkendale View	Sheffield	Walkley buffer	54	0	0%	n/a	21-30	3 0m	2	2	0	0	n/a	2	0	0%	0	0	wall	1	0	0	n/a	0
350	Brighton Terr Rd	Sheffield	Walkley buffer	66	56	76-99%	251-300m	21-30	3 0m	2	2	0	0	n/a	2	1	41-50%	0	0	wall	0	0	0	n/a	0
351	Daniel Hill St	Sheffield	Walkley buffer	35	23	51-75%	76-100m	101-200	3m+	2	2	0	0	n/a	2	2	100%	3	0	wall	1	0	0	n/a	0
352	Harold St	Sheffield	Walkley buffer	9	0	0%	101-150m	51-100	3m+	2	1	0	0	n/a	4	4	100%	0	0	wall	0	2	2	100%	0
353	Wales Pl & Otley Wlk	Sheffield	Walkley buffer	14	8	51-75%	n/a	1-10	3 0m	2	1	2	0	0%	2	2	100%	0	0	wall	0	1	1	100%	0
354	Singleton Grove & Cresc	Sheffield	Walkley buffer	28	24	76-99%	n/a	21-30	3 0m	2	1	0	0	n/a	4	0	0%	0	0	wall	0	0	0	n/a	0
355	Cobden View Rd	Sheffield	Walkley buffer	60	56	76-99%	151-200m	1-10	3m+	2	1	2	0	0%	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
356	Western Rd	Sheffield	Walkley buffer	87	80	76-99%	151-200m	21-30	3m+	3	1	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
357	Normandale Rd	Sheffield	Walkley buffer	0	0	-9	41-50m	21-30	3m+	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	1	0	0%	0
358	Portland Ct	Sheffield	Walkley buffer	13	13	100%	n/a	31-50	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
359	West Don St	Sheffield	Walkley buffer	9	0	0%	51-75m	1-10	3 0m	2	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
360	Balaclava Rd	Sheffield	Walkley buffer	6	0	0%	51-75m	0	3 0m	3	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
361	Barrack Lane	Sheffield	Walkley buffer	4	0	0%	51-75m	1-10	3 0m	4	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
362	Flora St	Sheffield	Walkley buffer	4	0	0%	51-75m	11-20	3 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
363	Wood St	Sheffield	Walkley buffer	3	0	0%	51-75m	11-20	3 0m	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
364	Ash St	Sheffield	Walkley buffer	3	0	0%	21-30m	21-30	3 0m	2	4	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
365	Lime St	Sheffield	Walkley buffer	2	0	0%	21-30m	21-30	n/a	-1'	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
366	Langsett Cresc & Freedom Ct	Sheffield	Walkley buffer	245	204	76-99%	31-40m	201-300	3 0m	2	2	1	0	0%	0	0	n/a	0	0	n/a	0	7	0	0%	0
367	Grammar St	Sheffield	Walkley buffer	8	1	0-25%	n/a	51-100	3m+	2	2	7	0	0%	0	0	n/a	0	0	n/a	1	0	0	n/a	0
368	Greaves St	Sheffield	Walkley buffer	11	10	76-99%	n/a	1-10	3m+	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	n/a	0
369	Langsett Walk et al	Sheffield	Walkley buffer	80	50	51-75%	n/a	51-100	3 0m	2	1	0	0	n/a	2	2	100%	2	0	n/a	0	0	0	n/a	0
370	Creswick Way & St	Sheffield	Walkley buffer	70	57	76-99%	n/a	31-50	3 0m	2	1	0	0	n/a	0	0	n/a	0	0	n/a	4	0	0	n/a	0
371	Cuthbert Bank Rd	Sheffield	Walkley buffer	10	0	0%	251-300m	51-100	3m+	2	4	0	0	n/a	0	0	n/a	0	0	n/a	1	0	0	n/a	0
372	Primrose Hill	Sheffield	Walkley buffer	15	14	76-99%	n/a	11-20	3m+	2	3	8	0	0%	2	2	100%	0	0	n/a	0	0	0	n/a	0
373	Barnforth St	Sheffield	Walkley buffer	10	9	76-99%	51-75m	31-50	3m+	2	3	0	0	n/a	4	4	100%	1	0	n/a	0	0	0	n/a	0
374	Victor St	Sheffield	Walkley buffer	4	2	26-50%	n/a	31-50	3 0m	2	3	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
375	Burnaby St	Sheffield	Walkley buffer	95	90	76-99%	n/a	11-20	3 0m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
376	Burnaby Cresc & Ct	Sheffield	Walkley buffer	61	62	76-99%	101-150m	51-100	3 0m	2	2	0	0	n/a	6	6	100%	4	0	n/a	1	2	0	0%	0
377	Grouse Croft	Sheffield	Walkley buffer	11	7	51-75%	n/a	1-10	3 0m	2	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
378	Burnaby Grn	Sheffield	Walkley buffer	43	40	76-99%	n/a	11-20	3m+	2	2	1	1	100%	1	1	100%	2	0	n/a	0	0	0	n/a	0
379	Majuba St	Sheffield	Walkley buffer	3	0	0%	n/a	11-20	3m+	3	2	1	1	100%	0	0	n/a	0	0	n/a	0	0	0	n/a	0
380	Redmires Road	Sheffield	Fulwood	158	88	51-75%	251-300m	300+	3 0m	3	1	0	0	n/a	14	4	21-30%	6	2	wall	0	16	8	41-50%	1

Uniq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_hms gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
381	Rochester Road	Sheffield	Fulwood	63	58	76-99%	301-400m	51-100	3 0m	3	1	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
382	Rochester Dr	Sheffield	Fulwood	23	19	76-99%	301-400m	51-100	3 0m	4	1	0	0	n/a	4	2	41-50%	0	0	n/a	1	0	0	n/a	0
383	Blackbrook Rd	Sheffield	Fulwood	55	27	26-50%	76-100m	51-100	2 5m	3	2	0	0	n/a	6	4	61-70%	0	0	n/a	0	0	0	n/a	3
384	Worcester Rd	Sheffield	Fulwood	18	15	76-99%	301-400m	31-50	3 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
385	Worcester Dr	Sheffield	Fulwood	36	32	76-99%	76-100m	51-100	2 5m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
386	Cranmer Lane	Sheffield	Fulwood	180	130	51-75%	101-150m	101-200	3 0m	3	1	0	0	n/a	4	0	0%	0	0	n/a	1	0	2	21-30%	0
387	Peterborough Rd	Sheffield	Fulwood	46	32	51-75%	151-200m	51-100	3m+	3	1	0	0	n/a	6	0	0%	0	0	n/a	0	0	0	n/a	0
388	Peterborough Dr	Sheffield	Fulwood	29	22	76-99%	401-500m	31-50	3m+	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
389	Peterborough Cl	Sheffield	Fulwood	12	12	76-99%	n/a	11-20	2 5m	4	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
390	Westminster Cres	Sheffield	Fulwood	50	37	51-75%	101-150m	11-20	2 5m	4	1	0	0	n/a	6	3	41-50%	4	0	n/a	0	0	0	n/a	0
391	Westminster Ave	Sheffield	Fulwood	14	6	26-50%	n/a	31-50	2 5m	2	1	0	0	n/a	2	2	100%	3	1	wall	0	0	0	n/a	0
392	Westminster Cl	Sheffield	Fulwood	24	20	76-99%	n/a	11-20	n/a	-1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
393	Barncliffe Cresc	Sheffield	Fulwood	39	33	76-99%	251-300m	31-50	3 0m	2	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
394	Barncliffe Rd	Sheffield	Fulwood	70	57	76-99%	251-300m	51-100	3m+	3	1	0	0	n/a	8	1	11-20%	0	0	n/a	0	2	2	100%	0
395	Barncliffe Dr	Sheffield	Fulwood	20	15	51-75%	n/a	1-10	3 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
396	Barncliffe Cl	Sheffield	Fulwood	11	7	51-75%	n/a	31-50	3 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
397	Barncliffe Glen	Sheffield	Fulwood	13	8	51-75%	n/a	21-30	3 0m	4	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
398	Hallam Grange Rise	Sheffield	Fulwood	13	8	51-75%	401-500m	11-20	3 0m	2	1	0	0	n/a	3	0	0%	0	0	n/a	0	0	0	n/a	0
399	Hallam Grange Rd	Sheffield	Fulwood	81	64	76-99%	251-300m	51-100	3 0m	3	1	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
400	Hallam Grange Cresc	Sheffield	Fulwood	71	53	51-75%	401-500m	51-100	2 5m	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
401	St Albans Rd	Sheffield	Fulwood	75	68	76-99%	101-150m	101-200	2 5m	2	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
402	St Albans Dr	Sheffield	Fulwood	40	40	76-99%	251-300m	21-30	2 5m	2	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
403	St Albans Cl	Sheffield	Fulwood	20	20	76-99%	n/a	11-20	3 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
404	Hallamshire Rd	Sheffield	Fulwood	107	65	51-75%	251-300m	31-50	3m+	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	1	0	0%	0
405	Hallamshire Dr	Sheffield	Fulwood	19	14	51-75%	n/a	51-100	2 5m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
406	Hallamshire Cl	Sheffield	Fulwood	22	19	76-99%	n/a	31-50	2 5m	1	1	0	0	n/a	2	2	100%	0	0	n/a	1	0	0	n/a	0
407	Cranmer Dr	Sheffield	Fulwood	65	57	76-99%	n/a	51-100	3 0m	4	1	0	0	n/a	2	0	0%	1	0	n/a	0	0	0	n/a	0
408	Cranmer Ave	Sheffield	Fulwood	31	31	76-99%	n/a	21-30	2 0m	3	1	1	0	0%	2	0	0%	0	2	wall	0	0	0	n/a	0
409	Winchester Cresc	Sheffield	Fulwood	50	47	76-99%	401-500m	31-50	3 0m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
410	Winchester Rd	Sheffield	Fulwood	42	30	51-75%	76-100m	11-20	3m+	4	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
411	Winchester Dr	Sheffield	Fulwood	2	0	0%	76-100m	1-10	3 0m	2	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
412	Winchester Ave	Sheffield	Fulwood buffer	56	25	26-50%	251-300m	31-50	3 0m	3	1	0	0	n/a	4	0	0%	0	3	wall	0	0	0	n/a	0
413	Blackbrook Rd ext	Sheffield	Fulwood buffer	55	27	26-50%	76-100m	51-100	2 5m	3	2	0	0	n/a	6	4	61-70%	3	4	wall	0	0	0	n/a	3
414	Lodge Lane	Sheffield	Fulwood buffer	6	3	51-75%	201-250m	101-200	1 0m	3	1	0	0	n/a	6	0	0%	0	0	n/a	0	0	0	n/a	0
415	The Fairway	Sheffield	Fulwood buffer	18	15	76-99%	n/a	51-100	2 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
416	Blackbrook Ave	Sheffield	Fulwood buffer	33	29	76-99%	n/a	31-50	2 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
417	Blackbrook Dr	Sheffield	Fulwood buffer	39	33	76-99%	n/a	31-50	2 0m	4	1	0	0	n/a	2	0	0%	0	1	wall	0	0	0	n/a	0
418	Lodge Moor Rd	Sheffield	Fulwood buffer	25	22	76-99%	n/a	31-50	2 5m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
419	The Pines	Sheffield	Fulwood buffer	24	22	76-99%	n/a	31-50	n/a	-1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
420	Moorside	Sheffield	Fulwood buffer	24	23	76-99%	n/a	51-100	2 5m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
421	Moorcroft Close	Sheffield	Fulwood buffer	16	11	51-75%	n/a	11-20	2 0m	2	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
422	Moorcroft Dr	Sheffield	Fulwood buffer	31	28	76-99%	251-300m	51-100	3 0m	4	1	0	0	n/a	4	2	41-50%	0	0	n/a	1	0	0	n/a	0
423	Moorcroft Ave	Sheffield	Fulwood buffer	13	7	51-75%	151-200m	11-20	2 5m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
424	Moorcroft Rd	Sheffield	Fulwood buffer	27	22	76-99%	201-250m	51-100	3 0m	3	1	0	0	n/a	4	0	0%	1	0	n/a	0	0	0	n/a	0
425	Brooklands Ave	Sheffield	Fulwood buffer	82	75	76-99%	401-500m	51-100	3 0m	3	2	1	1	100%	6	3	41-50%	0	0	n/a	0	2	0	0%	0
426	School Green Lane	Sheffield	Fulwood buffer	26	12	26-50%	n/a	101-200	2 5m	2	1	1	0	0%	4	0	0%	1	0	n/a	0	0	0	n/a	0
427	Brooklands Dr	Sheffield	Fulwood buffer	10	8	76-99%	n/a	11-20	1 5m	3	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
428	Whitfield Rd	Sheffield	Fulwood buffer	34	31	76-99%	301-400m	31-50	3 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
429	Whiteley Lane	Sheffield	Fulwood buffer	25	11	26-50%	401-500m	51-100	2 0m	3	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
430	Brooklands Cresc	Sheffield	Fulwood buffer	100	85	76-99%	301-400m	31-50	2 5m	3	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	n/a	0
431	Brookhouse Hill	Sheffield	Fulwood buffer	44	22	26-50%	301-400m	21-30	2 5m	3	2	2	1	41-50%	2	0	0%	0	0	n/a	0	0	0	n/a	1
432	Castlewood Cresc	Sheffield	Fulwood buffer	14	12	76-99%	n/a	11-20	1 5m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
433	Castlewood Dr	Sheffield	Fulwood buffer	15	14	76-99%	n/a	21-30	3m+	2	1	1	0	0%	0	0	n/a	0	0	n/a	0	0	0	n/a	0
434	Castlewood Rd	Sheffield	Fulwood buffer	26	24	76-99%	301-400m	1-10	3m+	3	1	0	0	n/a	2	0	0%	0	0	n/a	1	0	0	n/a	0
435	Canterbury Cresc	Sheffield	Fulwood buffer	11	8	51-75%	301-400m	51-100	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
436	Chorley Road	Sheffield	Fulwood buffer	15	6	26-50%	201-250m	1-10	2 5m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	n/a	0
437	Silver Birch Ave	Sheffield	Fulwood buffer	15	11	51-75%	n/a	11-20	3m+	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
438	Chorley Place	Sheffield	Fulwood buffer	12	5	26-50%	n/a	11-20	1 0m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
439	Stumperlowe Hall Rd	Sheffield	Fulwood buffer	38	15	26-50%	401-500m	51-100	2 5m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
440	Stayleigh Ave	Sheffield	Fulwood buffer	54	51	76-99%	n/a	31-50	2 5m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
441	Stone Delf	Sheffield	Fulwood buffer	56	53	76-99%	n/a	51-100	2 5m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
442	Stumperlowe View	Sheffield	Fulwood buffer	30	30	100%	301-400m	31-50	2 5m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
443	Stumperlowe Croft	Sheffield	Fulwood buffer	15	13	76-99%	n/a	21-30	2 5m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
444	Hillcote Close	Sheffield	Fulwood buffer	52	41	76-99%	n/a	31-50	2 5m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0
445	Hillcote Dr	Sheffield	Fulwood buffer	10	9	76-99%	n/a	11-20	2 5m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
446	Tom Lane	Sheffield	Fulwood buffer	28	17	51-75%	101-150m	31-50	2 0m	2	1	4	0	0%	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
447	Hallam Grange Croft	Sheffield	Fulwood buffer	15	13	76-99%	n/a	11-20	2 5m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
448	Hallam Grange Close	Sheffield	Fulwood buffer	6	2	26-50%	n/a	11-20	2 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
449	Stayleigh Lane	Sheffield	Fulwood buffer	105	55	51-75%	151-200m	51-100	2 0m	3	1	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	n/a	0
450	Fulwood Rd	Sheffield	Fulwood buffer	24	10	26-50%	401-500m	51-100	3 0m	3	1	0	0	n/a	2	1	41-50%	2	2	wall	0	4	2	41-50%	0
451	Stumperlowe Lane	Sheffield	Fulwood buffer	7	0	0%	401-500m	51-100	2 0m	2	1	0	0	n/a	8	2	31-40%	0	0	n/a	0	0	0	n/a	0
452	Hillcote Mews	Sheffield	Fulwood buffer	14	6	0%	n/a	1-10	n/a	-1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
453	Hillcote Rise	Sheffield	Fulwood buffer	3	0	0%	n/a	1-10	n/a	-1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	n/a	0
454	Carsick View Rd	Sheffield	Fulwood buffer	3	0	51-75%	251-300m	31-50	1 5m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
455	Pitchford Lane	Sheffield	Fulwood buffer	15	9	26-50%	101-150m	31-50	1 5m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
456	The Ridge	Sheffield	Fulwood buffer	13	4	76-99%	n/a	21-30	2 5m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	n/a	0

Unq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_hwe gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
457	Staylegh Delph	Sheffield	Fulwood buffer	25	23	51-75%	n/a	31-50	2 0m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
458	Walton Street (S)	Oxford	Jericho	28	22	76-99%	201-250m	1-10	2 5m	1	1	0	0	n/a	5	5	100%	1	3	mixture of 2+	2	2	0	0%	0
459	Walton Street (N)	Oxford	Jericho	27	26	76-99%	51-75m	1-10	2 5m	1	1	0	0	n/a	5	5	100%	0	0	n/a	0	2	0	0%	0
460	Jusion Street	Oxford	Jericho	38	38	100%	76-100m	11-20	2 0m	2	1	0	0	n/a	3	3	100%	0	3	n/a	0	0	0	n/a	1
461	Cranham Terrace	Oxford	Jericho	15	12	76-99%	21-30m	1-10	2 0m	2	2	0	0	n/a	8	4	41-50%	0	1	wall	0	0	0	n/a	0
462	Vehables Close	Oxford	Jericho	3	0	0%	n/a	1-10	2 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
463	Allam Street	Oxford	Jericho	11	9	76-99%	21-30m	1-10	2 0m	2	1	0	0	n/a	3	0	0%	0	0	n/a	0	0	0	n/a	0
464	Mount Street	Oxford	Jericho	20	4	0-25%	31-40m	1-10	2 0m	2	1	1	0	0%	1	0	0%	0	0	n/a	0	0	0	n/a	1
465	Mount Place	Oxford	Jericho	4	0	0%	0-10m	11-20	n/a	2	2	0	0	n/a	0	0	n/a	3	2	wall	0	0	0	n/a	1
466	Canal Street	Oxford	Jericho	27	17	51-75%	21-30m	1-10	2 0m	2	2	0	0	n/a	6	1	11-20%	0	1	wall	0	2	0	0%	1
467	Combe Rd	Oxford	Jericho	10	7	51-75%	n/a	1-10	1 5m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	n/a	0
468	Dawson Place	Oxford	Jericho	6	4	51-75%	n/a	1-10	n/a	-1	3	0	0	n/a	0	0	n/a	2	0	n/a	0	0	0	n/a	0
469	St. Barnabas St	Oxford	Jericho	22	18	76-99%	n/a	1-10	2 0m	2	1	0	0	n/a	3	0	0%	0	1	n/a	0	0	0	n/a	1
470	Nelson Street	Oxford	Jericho	30	20	51-75%	76-100m	1-10	2 5m	2	2	0	0	n/a	4	0	0%	0	1	wall	0	0	0	n/a	0
471	Wellington Street	Oxford	Jericho	40	32	76-99%	51-75m	1-10	2 0m	2	3	0	0	n/a	3	1	31-40%	0	1	steps	0	0	0	n/a	1
472	Gt. Clarendon Street	Oxford	Jericho	120	119	76-99%	41-50m	21-30	2 5m	3	2	0	0	n/a	8	2	21-30%	3	0	n/a	0	0	0	n/a	1
473	School Court	Oxford	Jericho	10	1	0-25%	n/a	11-20	3 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	n/a	0
474	Albert Street	Oxford	Jericho	36	22	26-50%	41-50m	1-10	2 0m	3	2	0	0	n/a	7	3	41-50%	0	1	wall	0	0	0	n/a	0
475	Hart Street	Oxford	Jericho	50	50	100%	41-50m	11-20	2 0m	2	1	0	0	n/a	4	4	100%	2	0	n/a	0	0	0	n/a	0
476	Cardigan Street	Oxford	Jericho	23	20	76-99%	51-75m	1-10	2 0m	1	2	0	0	n/a	4	0	0%	0	1	wall	0	0	0	n/a	0
477	Victor Street	Oxford	Jericho	32	28	76-99%	76-100m	1-10	3 0m	2	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	n/a	0
478	Cranham Street	Oxford	Jericho	73	65	76-99%	76-100m	1-10	2 0m	2	1	0	0	n/a	2	0	0%	0	1	wall	0	1	0	0%	0
479	King Street	Oxford	Jericho	5	4	76-99%	51-75m	1-10	2 0m	2	2	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	n/a	0
480	Jericho Street	Oxford	Jericho	26	23	76-99%	76-100m	1-10	2 0m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	n/a	0
481	Walton Crescent	Oxford	Jericho	52	49	76-99%	251-300m	1-10	2 5m	1	1	0	0	n/a	1	0	0%	0	0	n/a	0	0	0	Missing va	2
482	Kingston Road	Oxford	Jericho buffer	168	148	76-99%	251-300m	21-30	2 0m	3	1	0	0	n/a	8	8	100%	2	0	n/a	0	4	0	0%	1
483	Walton Well Road	Oxford	Jericho buffer	13	13	100%	251-300m	1-10	2 5m	3	1	0	0	n/a	4	3	71-80%	0	0	n/a	0	0	0	Missing va	0
484	Longworth Road	Oxford	Jericho buffer	15	7	26-50%	251-300m	1-10	2 0m	2	1	0	0	n/a	3	1	31-40%	0	0	n/a	0	0	0	Missing va	0
485	Southmoor Road	Oxford	Jericho buffer	129	124	76-99%	201-250m	11-20	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
486	Southmoor Place	Oxford	Jericho buffer	4	0	0%	76-100m	11-20	2 5m	2	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	Missing va	0
487	Rutherway	Oxford	Jericho buffer	38	6	0-25%	301-400m	31-50	3m+	1	1	0	0	n/a	4	1	21-30%	0	0	n/a	0	0	0	Missing va	0
488	The Crescent	Oxford	Jericho buffer	14	7	26-50%	n/a	11-20	2 5m	1	1	0	0	n/a	1	0	0%	0	0	n/a	0	0	0	Missing va	0
489	Farndon Road	Oxford	Jericho buffer	35	24	51-75%	151-200m	31-50	3m+	3	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	1
490	Tackley Place	Oxford	Jericho buffer	17	11	51-75%	51-75m	11-20	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
491	Leckford Road	Oxford	Jericho buffer	55	43	76-99%	201-250m	21-30	2 5m	2	2	0	0	n/a	6	4	61-70%	0	1	wall	0	0	0	Missing va	0
492	Plantation Road	Oxford	Jericho buffer	71	52	51-75%	151-200m	11-20	1 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
493	St Bernard's Road	Oxford	Jericho buffer	80	65	76-99%	151-200m	31-50	3m+	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
494	Arthur Grd Close	Oxford	Jericho buffer	10	6	51-75%	n/a	1-10	3 0m	2	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
495	Walton Manor Court	Oxford	Jericho buffer	6	4	51-75%	n/a	1-10	n/a	-1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
496	Belsyre Court	Oxford	Jericho buffer	3	1	26-50%	n/a	1-10	n/a	-1	1	2	2	100%	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
497	Woodstock Road	Oxford	Jericho buffer	133	45	26-50%	201-250m	201-300	3m+	2	2	0	0	n/a	20	19	91-99%	13	2	wall	2	8	4	41-50%	0
498	Adelaide Street	Oxford	Jericho buffer	32	18	51-75%	151-200m	11-20	2 5m	3	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
499	Observatory Street	Oxford	Jericho buffer	85	79	76-99%	51-75m	11-20	2 5m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
500	Little Clarendon St.	Oxford	Jericho buffer	26	21	76-99%	151-200m	1-10	3m+	2	2	0	0	n/a	4	4	100%	0	3	wall/steps	2	0	0	Missing va	0
501	Walton Lane	Oxford	Jericho buffer	30	0	0%	76-100m	1-10	n/a	-1	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
502	Richmond Road	Oxford	Jericho buffer	30	25	76-99%	101-150m	11-20	3m+	3	2	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
503	Worcester Place	Oxford	Jericho buffer	40	30	51-75%	151-200m	11-20	3m+	3	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
504	Walton Street cont.	Oxford	Jericho buffer	60	45	51-75%	51-75m	21-30	3 0m	3	1	0	0	n/a	4	0	0%	0	0	n/a	0	1	0	0%	0
505	Worcester Street	Oxford	Jericho buffer	7	1	0-25%	21-30m	11-20	3m+	1	1	0	0	n/a	4	4	100%	0	3	wall	0	0	0	Missing va	0
506	Beaumont Street	Oxford	Jericho buffer	70	40	51-75%	51-75m	11-20	3m+	2	1	0	0	n/a	4	4	100%	1	4	wall	0	2	0	0%	1
507	St. John Street	Oxford	Jericho buffer	12	8	51-75%	101-150m	0	3 0m	3	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
508	Pusey Place	Oxford	Jericho buffer	10	0	0%	76-100m	1-10	2 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
509	Pusey Lane	Oxford	Jericho buffer	40	0	0%	51-75m	11-20	2 5m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
510	Pusey Street	Oxford	Jericho buffer	8	1	0-25%	76-100m	1-10	3 0m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
511	Beaumont Place	Oxford	Jericho buffer	35	28	76-99%	51-75m	31-50	1 5m	3	1	0	0	n/a	2	1	41-50%	3	0	n/a	1	0	0	Missing va	0
512	Wellington Square	Oxford	Jericho buffer	42	40	76-99%	n/a	21-30	3 0m	3	1	0	0	n/a	4	2	41-50%	0	4	wall	0	0	0	Missing va	0
513	St Giles	Oxford	Jericho buffer	40	30	51-75%	101-150m	51-100	3m+	1	1	0	0	n/a	8	6	100%	5	15	wall/steps	0	0	0	Missing va	1
514	Merrivale Square	Oxford	Jericho buffer	39	24	51-75%	n/a	31-50	3 0m	1	1	0	0	n/a	4	0	0%	2	0	n/a	0	0	0	Missing va	1
515	Hayfield Road	Oxford	Jericho buffer	7	4	51-75%	n/a	11-20	2 5m	2	1	0	0	n/a	8	2	31-40%	0	1	wall	0	0	0	Missing va	0
516	Chalfont Road	Oxford	Jericho buffer	15	9	51-75%	n/a	11-20	3m+	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
517	Aristotle Lane	Oxford	Jericho buffer	8	0	0%	151-200m	31-50	3m+	1	2	1	1	100%	4	4	100%	3	0	n/a	0	0	0	Missing va	1
518	Polstead Road	Oxford	Jericho buffer	22	17	76-99%	76-100m	31-50	3 0m	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
519	St. Margaret's Road	Oxford	Jericho buffer	32	17	51-75%	201-250m	31-50	3m+	2	1	0	0	n/a	4	4	100%	1	1	wall	0	0	0	Missing va	0
520	Plater Drive	Oxford	Jericho buffer	70	65	76-99%	201-250m	21-30	3m+	1	1	0	0	n/a	2	0	0%	2	0	n/a	0	0	0	Missing va	0
521	Balliol Court	Oxford	Jericho buffer	12	12	100%	n/a	1-10	n/a	1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
522	The Villas	Oxford	Jericho buffer	12	0	0%	n/a	31-50	3m+	1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
523	Warnborough Road	Oxford	Jericho buffer	41	30	51-75%	201-250m	51-100	2 5m	3	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
524	Leckford Place	Oxford	Jericho buffer	21	16	76-99%	76-100m	1-10	2 5m	2	1	0	0	n/a	6	5	81-90%	0	0	n/a	0	0	0	Missing va	0
525	Canterbury Road	Oxford	Jericho buffer	18	6	26-50%	101-150m	31-50	3m+	1	2	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	1
526	Church Walk	Oxford	Jericho buffer	9	2	0-25%	n/a	21-30	3m+	2	1	0	0	n/a	2	0	0%	1	0	n/a	0	0	0	Missing va	0
527	North Parade	Oxford	Jericho buffer	22	20	76-99%	101-150m	1-10	2 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
528	Winchester Road	Oxford	Jericho buffer	33	21	51-75%	151-200m	51-100	3m+	2	1	0	0	n/a	6	1	11-20%	0	0	n/a	0	0	0	Missing va	0
529	Norham Road	Oxford	Jericho buffer	6	1	0-25%	151-200m	21-30	3m+	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	Missing va	0
530	Bradmore Road	Oxford	Jericho buffer	27	13	26-50%	101-150m	31-50	3m+	2	1	0	0	n/a	2	0	0%	0	5	wall	0	0	0	Missing va	0
531	Crick Road	Oxford	Jericho buffer	9	3	26-50%	151-200m	31-50	3m+	2	1	0	0	n/a	2	0	0%	0	2	wall	0	0	0	Missing va	0
532	Norham Gardens	Oxford	Jericho buffer	7	3	26-50%	251-300m	21-30	3m+	2	1	0	0	n/a	2	0	0%	1	1	wall	0	0	0	Missing va	0

Unq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active_front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bus gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
533	Bevington Road	Oxford	Jericho buffer	18	11	51-75%	76-100m	21-30	3m+	3	2	0	0	n/a	6	6	100%	0	1	bollards	0	0	0	Missing va	0
534	Parks Road	Oxford	Jericho buffer	14	3	0-25%	251-300m	201-300	3m+	2	1	0	0	n/a	10	10	100%	0	1	wall	0	1	0	0%	1
535	South Parks Road	Oxford	Jericho buffer	2	0	0%	n/a	11-20	3m+	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
536	Magdalen Street	Oxford	Jericho buffer	11	9	76-99%	101-150m	1-10	3m+	1	1	0	0	n/a	4	4	100%	0	0	n/a	0	4	3	71-80%	1
537	Commarket Street	Oxford	Jericho buffer	60	60	100%	151-200m	1-10	3m+	1	1	0	0	n/a	2	2	100%	6	0	n/a	0	0	0	Missing va	1
538	Broad Street	Oxford	Jericho buffer	20	15	51-75%	151-200m	1-10	3m+	2	1	0	0	n/a	2	2	100%	2	0	n/a	0	0	0	Missing va	1
539	Ship Street	Oxford	Jericho buffer	13	8	51-75%	n/a	1-10	2 0m	2	1	0	0	n/a	2	2	100%	0	8	wall	0	0	0	Missing va	1
540	Gloucester St	Oxford	Jericho buffer	14	10	51-75%	101-150m	1-10	3 0m	3	1	0	0	n/a	4	4	100%	8	0	n/a	0	0	0	Missing va	1
541	Gloucester Place	Oxford	Jericho buffer	7	5	51-75%	101-150m	1-10	3m+	1	1	0	0	n/a	4	4	100%	0	2	wall	0	0	0	Missing va	0
542	Gloucester Green	Oxford	Jericho buffer	17	13	76-99%	51-75m	21-30	3m+	1	3	0	0	n/a	4	4	100%	4	6	wall	0	0	0	Missing va	1
543	Gloucester Lane	Oxford	Jericho buffer	6	4	51-75%	76-100m	1-10	3m+	1	2	0	0	n/a	2	2	100%	16	0	n/a	0	8	8	100%	0
544	George Street	Oxford	Jericho buffer	39	33	76-99%	151-200m	1-10	3m+	1	1	0	0	n/a	6	6	100%	0	0	n/a	0	5	1	11-20%	1
545	Bulwerks Lane	Oxford	Jericho buffer	10	1	0-25%	31-40m	1-10	3 0m	1	1	2	0	0%	0	0	n/a	0	2	wall	0	0	0	Missing va	0
546	New Road	Oxford	Jericho buffer	7	4	51-75%	151-200m	1-10	3m+	1	1	0	0	n/a	1	1	100%	1	7	mixture of 2+	0	3	3	100%	1
547	Hythe Bridge Street	Oxford	Jericho buffer	8	5	51-75%	n/a	1-10	3m+	1	1	0	0	n/a	4	4	100%	0	3	wall/steps	0	0	0	Missing va	1
548	Park End St (station)	Oxford	Jericho buffer	12	10	76-99%	21-30m	11-20	3m+	1	1	0	0	n/a	8	8	100%	0	4	wall	0	4	4	100%	1
549	Rewley Road	Oxford	Jericho buffer	10	1	0-25%	76-100m	31-50	3m+	1	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
550	Great Mead	Oxford	Jericho buffer	4	2	26-50%	n/a	11-20	3m+	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	1
551	Upper Fisher Row	Oxford	Jericho buffer	18	18	100%	n/a	11-20	3 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
552	University Parks	Oxford	Jericho buffer	0	0	-9	n/a	300+	3m+	2	1	0	0	n/a	0	0	n/a	25	0	n/a	0	0	0	Missing va	1
553	Banbury Rd	Oxford	Jericho buffer	85	38	26-50%	251-300m	201-300	3m+	2	2	0	0	n/a	22	22	100%	9	4	wall/steps	0	7	2	21-30%	1
554	Keble Rd	Oxford	Jericho buffer	3	0	0%	n/a	21-30	3m+	2	2	0	0	n/a	4	4	100%	0	1	wall	0	0	0	Missing va	1
555	Blackhall Rd	Oxford	Jericho buffer	10	2	0-25%	251-300m	11-20	3m+	3	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
556	Museum Rd	Oxford	Jericho buffer	16	12	51-75%	n/a	1-10	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
557	Abingdon Rd (S)	Oxford	Grandpont	48	31	51-75%	76-100m	11-20	3 0m	1	1	0	0	n/a	5	5	100%	0	0	n/a	0	2	0	0%	0
558	Abingdon Rd (N)	Oxford	Grandpont	12	6	26-50%	76-100m	11-20	3 0m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	2	0	0%	1
559	Edith Road	Oxford	Grandpont	36	32	76-99%	101-150m	1-10	3 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
560	Chilswell Road	Oxford	Grandpont	65	58	76-99%	51-75m	1-10	2 5m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
561	Newton Rd	Oxford	Grandpont	46	36	76-99%	51-75m	1-10	2 5m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
562	Marlborough Rd (S)	Oxford	Grandpont	37	37	100%	51-75m	1-10	2 0m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
563	Marlborough Rd (N)	Oxford	Grandpont	116	111	76-99%	76-100m	11-20	3 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	1
564	Kineton Rd	Oxford	Grandpont	27	25	76-99%	51-75m	1-10	3 0m	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	Missing va	0
565	Hodges Court	Oxford	Grandpont	22	15	51-75%	n/a	1-10	2 5m	1	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
566	Pegasus Grange	Oxford	Grandpont	2	0	0%	n/a	11-20	n/a	-1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
567	Whitehouse Rd	Oxford	Grandpont	40	7	0-25%	251-300m	31-50	3 0m	1	1	0	0	n/a	1	1	100%	4	0	n/a	0	0	0	Missing va	1
568	Salter Close	Oxford	Grandpont	9	4	26-50%	n/a	21-30	3 0m	2	1	0	0	n/a	1	1	100%	0	4	mixture of 2+	0	0	0	Missing va	1
569	Longford Close	Oxford	Grandpont	3	0	0%	n/a	11-20	3 0m	3	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
570	Western Road	Oxford	Grandpont	62	60	76-99%	76-100m	1-10	3 0m	1	1	0	0	n/a	3	3	100%	0	0	n/a	0	0	0	Missing va	0
571	Riverside Court	Oxford	Grandpont	4	4	100%	n/a	11-20	2 5m	2	1	0	0	n/a	1	1	100%	0	1	n/a	0	0	0	Missing va	0
572	Buckingham St.	Oxford	Grandpont	42	38	76-99%	n/a	1-10	2 5m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
573	Brook St.	Oxford	Grandpont	23	12	51-75%	n/a	1-10	3 0m	1	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	1
574	Cobden Crescent	Oxford	Grandpont	15	12	76-99%	51-75m	1-10	2 5m	1	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	1
575	Jubilee Terrace	Oxford	Grandpont	14	10	51-75%	151-200m	11-20	3m+	2	1	0	0	n/a	0	0	n/a	0	3	steps	0	0	0	Missing va	0
576	Lake Street	Oxford	Grandpont buffer	60	47	76-99%	76-100m	1-10	2 0m	2	1	0	0	n/a	5	2	31-40%	0	0	n/a	0	0	0	Missing va	1
577	Summerfield Street	Oxford	Grandpont buffer	32	28	76-99%	n/a	1-10	2 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
578	Gordon Street	Oxford	Grandpont buffer	27	17	51-75%	76-100m	1-10	1 5m	1	1	0	0	n/a	4	0	0%	0	0	n/a	2	0	0	Missing va	0
579	Vicarage Lane	Oxford	Grandpont buffer	24	17	51-75%	n/a	1-10	1 5m	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	1	0	0	Missing va	0
580	Vicarage Road	Oxford	Grandpont buffer	47	42	76-99%	51-75m	11-20	2 5m	1	1	0	0	n/a	8	3	31-40%	0	0	n/a	0	0	0	Missing va	1
581	Stewart Street	Oxford	Grandpont buffer	13	7	51-75%	n/a	1-10	2 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
582	School Place	Oxford	Grandpont buffer	11	7	51-75%	n/a	1-10	1 5m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
583	Green Place	Oxford	Grandpont buffer	22	17	76-99%	n/a	1-10	1 5m	2	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	Missing va	0
584	Wytham Street	Oxford	Grandpont buffer	97	97	100%	101-150m	21-30	2 0m	2	1	0	0	n/a	5	3	51-60%	0	1	bollards	1	0	0	Missing va	1
585	Norreys Avenue	Oxford	Grandpont buffer	73	67	76-99%	101-150m	11-20	2 0m	2	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
586	Sunningwell Road	Oxford	Grandpont buffer	97	94	76-99%	151-200m	21-30	2 0m	2	1	0	0	n/a	5	4	71-80%	0	0	n/a	0	0	0	Missing va	0
587	Lincoln Road	Oxford	Grandpont buffer	44	40	76-99%	101-150m	11-20	2 0m	2	1	0	0	n/a	4	2	41-50%	0	0	n/a	0	0	0	Missing va	0
588	Monmouth Road	Oxford	Grandpont buffer	32	25	76-99%	101-150m	11-20	2 0m	1	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
589	Varsity Place	Oxford	Grandpont buffer	6	3	26-50%	n/a	11-20	2 0m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
590	Northampton Road	Oxford	Grandpont buffer	25	20	76-99%	101-150m	1-10	2 0m	1	1	0	0	n/a	4	4	100%	0	0	n/a	1	0	0	Missing va	0
591	Oswestry Road	Oxford	Grandpont buffer	28	24	76-99%	101-150m	11-20	2 0m	3	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
592	Weirs Road	Oxford	Grandpont buffer	15	14	76-99%	76-100m	1-10	2 0m	2	1	0	0	n/a	2	1	41-50%	0	1	wall	0	1	0	0%	0
593	Chatham Road	Oxford	Grandpont buffer	30	25	76-99%	101-150m	1-10	2 0m	1	2	0	0	n/a	1	1	100%	0	0	n/a	1	0	0	Missing va	0
594	Abingdon Road (south of Hinksey Pk)	Oxford	Grandpont buffer	78	68	76-99%	51-75m	31-50	3m+	3	1	0	0	n/a	10	9	81-90%	0	2	wall	3	3	3	100%	1
595	Friars Wharf	Oxford	Grandpont buffer	22	10	26-50%	301-400m	11-20	2 5m	2	4	1	1	100%	1	1	100%	0	0	n/a	1	0	0	Missing va	1
596	Dale Close	Oxford	Grandpont buffer	40	4	0-25%	301-400m	21-30	3 0m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
597	Trinity Street	Oxford	Grandpont buffer	70	24	26-50%	31-40m	1-10	2 0m	1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
598	Sadler Walk	Oxford	Grandpont buffer	10	10	100%	31-40m	31-50	2 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
599	Blackfriars Road	Oxford	Grandpont buffer	9	9	100%	76-100m	11-20	3 0m	1	1	0	0	n/a	1	0	0%	0	2	wall	0	0	0	Missing va	0
600	Preachers Lane	Oxford	Grandpont buffer	35	8	0-25%	76-100m	1-10	3 0m	1	2	0	0	n/a	0	0	n/a	0	4	mixture of 2+	0	0	0	Missing va	0
601	St Aldates	Oxford	Grandpont buffer	44	24	51-75%	151-200m	11-20	3 0m	1	1	0	0	n/a	3	3	100%	10	1	wall	0	11	11	100%	1
602	Thames Street	Oxford	Grandpont buffer	31	1	0-25%	151-200m	21-30	3m+	1	2	0	0	n/a	3	3	100%	0	3	wall	0	0	0	Missing va	0
603	Oxpens Road	Oxford	Grandpont buffer	10	4	26-50%	301-400m	51-100	3m+	1	2	0	0	n/a	2	2	100%	0	1	wall	0	0	0	Missing va	1
604	Osney Lane	Oxford	Grandpont buffer	14	8	51-75%	21-30m	1-10	3 0m	1	3	0	0	n/a	4	3	71-80%	0	15	wall	0	0	0	Missing va	1
605	Luther Close	Oxford	Grandpont buffer	6	3	26-50%	n/a	1-10	2 5m	1	1	0	0	n/a	0	0	n/a	0	1	wall	1	0	0	Missing va	1
606	Luther Street	Oxford	Grandpont buffer	6	3	26-50%	n/a	1-10	1 0m	1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
607	Butterwyke Place	Oxford	Grandpont buffer	4	0	0%	151-200m	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
608	Cromwell Street	Oxford	Grandpont buffer	4	0	0%	n/a	1-10	3 0m	2	1	0	0	n/a	1	1	100%	0	2	wall	0	0	0	Missing va	1

Uniq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_actve_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_lamp gdns	Q16_no_busstops	Q16a_no bshelters	Q16b_%_bshelters	Q17_landmk type
609	Speedwell Street	Oxford	Grandpont buffer	7	0	0%	401-500m	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	4	mixture of 2+	0	2	2	100%	0
610	Old Greyfriars Street	Oxford	Grandpont buffer	2	0	0%	76-100m	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	1	wall	0	0	0	Missing va	1
611	Norfolk Street	Oxford	Grandpont buffer	9	2	0-25%	51-75m	11-20	3 0m	1	1	0	0	n/a	3	0	0%	7	1	wall	0	0	0	Missing va	1
612	Paradise Square	Oxford	Grandpont buffer	14	11	76-99%	51-75m	1-10	2 5m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
613	Paradise Street	Oxford	Grandpont buffer	12	3	0-25%	51-75m	1-10	2 5m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
614	St. Thomas's Street	Oxford	Grandpont buffer	9	3	51-75%	76-100m	1-10	2 5m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
615	The Hamel	Oxford	Grandpont buffer	6	5	76-99%	31-40m	1-10	3m+	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	Missing va	0
616	Ped. path (St.Thomas's to The Hamel)	Oxford	Grandpont buffer	2	0	0%	21-30m	1-10	2 5m	1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
617	Woodbine Place	Oxford	Grandpont buffer	10	7	51-75%	41-50m	1-10	2.0m	2	1	0	0	n/a	1	0	0%	0	0	n/a	0	0	0	Missing va	0
618	Marsh Lane	Oxford	Grandpont buffer	4	1	0-25%	76-100m	0	2 0m	1	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	Missing va	0
619	New Road	Oxford	Grandpont buffer	7	4	51-75%	151-200m	1-10	3m+	1	1	0	0	n/a	1	1	100%	1	7	wall	0	2	3	100%	1
620	Castle Street	Oxford	Grandpont buffer	4	1	26-50%	76-100m	1-10	3 0m	1	1	0	0	n/a	3	3	100%	4	3	wall	0	3	3	100%	0
621	Bulwarks Lane	Oxford	Grandpont buffer	10	1	0-25%	31-40m	1-10	3 0m	1	1	2	0	0%	0	0	0%	0	2	wall	0	0	0	Missing va	0
622	Queen Street	Oxford	Grandpont buffer	50	50	100%	151-200m	1-10	3m+	1	1	0	0	n/a	2	2	100%	4	8	wall	0	7	0	0%	2
623	New Inn Hall Street	Oxford	Grandpont buffer	18	16	76-99%	51-75m	1-10	3m+	1	2	0	0	n/a	1	1	100%	0	1	wall	0	0	0	Missing va	2
624	Shoe Lane	Oxford	Grandpont buffer	3	2	51-75%	21-30m	1-10	2 5m	1	1	0	0	n/a	1	1	100%	0	5	wall	0	0	0	Missing va	1
625	Commarket	Oxford	Grandpont buffer	60	60	100%	151-200m	1-10	3m+	1	1	0	0	n/a	2	2	100%	6	0	n/a	0	0	0	Missing va	0
626	Market Street	Oxford	Grandpont buffer	5	3	51-75%	401-500m	0	3m+	2	2	0	0	n/a	0	0	n/a	0	0	n/a	0	0		Missing va	1
627	High Street	Oxford	Grandpont buffer	51	46	76-99%	31-40m	1-10	3 0m	1	1	1	0	0%	1	0	0%	3	3	mixture of 2+	0	4	0	0%	1
628	Alfred Street	Oxford	Grandpont buffer	9	3	26-50%	51-75m	0	2 5m	2	1	0	0	n/a	1	0	0%	0	0	n/a	6	0	0	Missing va	0
629	Blue Boar Street	Oxford	Grandpont buffer	8	4	26-50%	76-100m	0	2.5m	3	1	0	0	n/a	0	0	n/a	0	2	wall/steps	0	0	0	Missing va	0
630	Bear Lane	Oxford	Grandpont buffer	13	3	0-25%	76-100m	0	1 5m	3	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
631	King Edward Street	Oxford	Grandpont buffer	16	14	76-99%	51-75m	1-10	3 0m	2	1	0	0	n/a	1	0	0%	0	0	n/a	0	0	0	Missing va	1
632	Oriel Street	Oxford	Grandpont buffer	12	11	76-99%	51-75m	1-10	2 0m	2	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
633	Oriel Square	Oxford	Grandpont buffer	4	1	0-25%	n/a	1-10	3 0m	2	1	0	0	n/a	1	0	0%	0	1	wall	0	0	0	Missing va	0
634	Merton Street	Oxford	Grandpont buffer	10	3	51-75%	301-400m	1-10	2 5m	3	2	0	0	n/a	1	0	0%	0	0	n/a	0	0	0	Missing va	0
635	Deadman's Walk	Oxford	Grandpont buffer	5	0	0%	n/a	1-10	3m+	2	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	1
636	Broad Walk	Oxford	Grandpont buffer	1	1	100%	n/a	31-50	3m+	1	1	2	0	0%	0	0	n/a	5	1	wall	0	0	0	Missing va	2
637	The New Walk	Oxford	Grandpont buffer	0	0	-9	n/a	31-50	3m+	2	1	0	0	n/a	0	0	n/a	3	0	n/a	0	0	0	Missing va	1
638	Floyds Row	Oxford	Grandpont buffer	2	1	26-50%	n/a	1-10	3 0m	1	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	1
639	Trill Mill Court	Oxford	Grandpont buffer	8	2	0-25%	n/a	1-10	2 0m	1	2	0	0	n/a	0	0	n/a	4	0	n/a	0	0	0	Missing va	0
640	St. Ebbes Street	Oxford	Grandpont buffer	25	16	51-75%	76-100m	1-10	3 0m	1	1	0	0	n/a	2	1	41-50%	0	3	wall	0	0	0	Missing va	0
641	Pembroke Street	Oxford	Grandpont buffer	37	25	51-75%	401-500m	0	1 5m	2	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	Missing va	0
642	Beef Lane	Oxford	Grandpont buffer	0	0	-9	n/a	0	n/a	-1	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
643	Pembroke Square	Oxford	Grandpont buffer	3	0	0%	n/a	1-10	1 5m	2	1	0	0	n/a	0	0	n/a	0	2	wall	0	0	0	Missing va	1
644	Brewer Street	Oxford	Grandpont buffer	13	4	26-50%	301-400m	1-10	1 5m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
645	Rose Place	Oxford	Grandpont buffer	9	0	0%	401-500m	1-10	3 0m	2	1	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
646	Roger Bacon Lane	Oxford	Grandpont buffer	5	0	0%	201-250m	1-10	3 0m	1	2	0	0	n/a	0	0	n/a	0	2	wall	0	0	0	Missing va	0
647	Turn Again Lane	Oxford	Grandpont buffer	11	8	51-75%	21-30m	1-10	2 5m	1	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
648	Pike Terrace	Oxford	Grandpont buffer	16	6	26-50%	401-500m	1-10	2 0m	1	2	0	0	n/a	1	0	0%	0	0	n/a	1	0	0	Missing va	0
649	Faulkner Street	Oxford	Grandpont buffer	20	0	0%	31-40m	1-10	3 0m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	1
650	Albion Place	Oxford	Grandpont buffer	4	0	0%	301-400m	1-10	3 0m	1	1	0	0	n/a	1	0	0%	0	0	n/a	0	0	0	Missing va	0
651	Cambridge Terrace	Oxford	Grandpont buffer	4	1	0-25%	n/a	1-10	3 0m	2	1	0	0	n/a	1	1	100%	0	0	n/a	0	0	0	Missing va	0
652	Shire Lake Close	Oxford	Grandpont buffer	19	13	51-75%	n/a	1-10	3 0m	2	1	0	0	n/a	1	1	100%	0	1	wall	0	0	0	Missing va	0
653	Magpie Lane	Oxford	Grandpont buffer	12	7	51-75%	51-75m	1-10	1 5m	2	1	0	0	n/a	1	1	100%	0	2	wall/boll	0	0	0	Missing va	0
654	Kybald Street	Oxford	Grandpont buffer	4	2	26-50%	n/a	1-10	1 5m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
655	Cuddesdon Way	Oxford	Blackbird Leys	35	25	51-75%	51-75m	21-30	3m+	2	2	2	0	0%	10	7	61-70%	0	5	mixture of 2+	2	0	0	Missing va	1
656	Comfrey Rd	Oxford	Blackbird Leys	27	15	51-75%	n/a	1-10	3m+	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
657	Watlington Rd (to Blackberry Lane)	Oxford	Blackbird Leys	61	13	0-25%	151-200m	201-300	3m+	4	3	2	0	0%	22	20	91-90%	0	23	wall/boll	0	2	1	41-50%	1
658	Berry Close	Oxford	Blackbird Leys	25	16	51-75%	n/a	11-20	3 0m	2	1	0	0	n/a	4	4	100%	0	0	n/a	0	0	0	Missing va	0
659	Pegasus Rd	Oxford	Blackbird Leys	31	21	51-75%	41-50m	51-100	3 0m	3	2	0	0	n/a	10	6	41-50%	4	2	mixture of 2+	0	2	1	41-50%	1
660	Pegasus Court	Oxford	Blackbird Leys	17	17	100%	n/a	1-10	n/a	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
661	Juniper Drive	Oxford	Blackbird Leys	6	4	51-75%	51-75m	11-20	2 0m	1	2	0	0	n/a	2	0	0%.	0	0	n/a	0	0	0	Missing va	0
662	Erica Close	Oxford	Blackbird Leys	2	0	0%	n/a	1-10	2 5m	1	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
663	Briar Way	Oxford	Blackbird Leys	16	13	76-99%	151-200m	1-10	2 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
664	Jasmine Close	Oxford	Blackbird Leys	25	13	51-75%	n/a	1-10	2 0m	2	2	0	0	n/a	2	0	0%	0	1	wall	0	0	0	Missing va	0
665	Borrel Road	Oxford	Blackbird Leys	47	38	76-99%	101-150m	21-30	2 5m	3	4	0	0	n/a	4	0	0%	0	1	wall	0	0	0	Missing va	0
666	Prunus Close	Oxford	Blackbird Leys	10	10	100%	n/a	1-10	2 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	6	0	0	Missing va	0
667	Pine Close	Oxford	Blackbird Leys	10	9	76-99%	n/a	1-10	2 0m	2	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
668	Ashmole Place	Oxford	Blackbird Leys	20	5	0-25%	n/a	1-10	3 0m	2	1	0	0	n/a	2	0	0%	0	8	bollards	0	0	0	0%	0
669	Timothy Way	Oxford	Blackbird Leys	12	12	100%	n/a	1-10	2 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
670	Vetch Place	Oxford	Blackbird Leys	12	12	100%	n/a	1-10	2 0m	3	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
671	Woodruff Place	Oxford	Blackbird Leys	13	12	76-99%	n/a	0	2 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
672	Blackberry Lane	Oxford	Blackbird Leys	14	2	0-25%	151-200m	201-300	2 0m	2	1	0	0	n/a	2	2	100%	3	1	wall	0	0	0	Missing va	0
673	Field Avenue	Oxford	Blackbird Leys	6	0	0%	51-75m	11-20	3 0m	1	1	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	Missing va	0
674	Ambassador Ave	Oxford	Blackbird Leys buffer	5	0	0%	n/a	11-20	3 0m	1	3	0	0	n/a	4	4	100%	0	0	n/a	0	1	1	100%	1
675	Retail Park	Oxford	Blackbird Leys buffer	11	0	0%	n/a	31-50	3m+	1	1	0	0	n/a	8	8	100%	1	6	low fence	0	1	1	100%	1
676	Watlington Road	Oxford	Blackbird Leys buffer	50	0	0%	31-40m	101-200	3 0m	2	1	0	0	n/a	12	8	61-70%	0	0	n/a	0	0	0	Missing va	0
677	Ashville Way	Oxford	Blackbird Leys buffer	10	0	0%	n/a	11-20	3 0m	3	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
678	Transport Way	Oxford	Blackbird Leys buffer	11	2	0-25%	201-250m	11-20	3m+	2	2	0	0	n/a	4	2	41-50%	0	3	wall	0	0	0	Missing va	0
679	Oxford Road	Oxford	Blackbird Leys buffer	4	0	0%	151-200m	21-30	3 0m	3	3	0	0	n/a	6	2	31-40%	0	1	wall	0	0	0	Missing va	1
680	Sandy Lane	Oxford	Blackbird Leys buffer	59	40	51-75%	301-400m	31-50	3m+	3	2	0	0	n/a	2	0	0%	1	0	n/a	0	0	0	Missing va	1
681	Druce Way	Oxford	Blackbird Leys buffer	37	8	0-25%	n/a	21-30	3m+	2	2	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
682	Tucker Rd	Oxford	Blackbird Leys buffer	31	16	51-75%	76-100m	1-10	3m+	3	1	0	0	n/a	6	2	31-40%	0	0	n/a	0	0	0	Missing va	0
683	Ladenham Rd off Sandy Rd	Oxford	Blackbird Leys buffer	14	14	100%	n/a	11-20	3m+	2	2	0	0	n/a	2	0	0%	4	0	n/a	0	0	0	Missing va	0
684	Ladenham Rd off Balfour Rd	Oxford	Blackbird Leys buffer	14	14	100%	n/a	1-10	3m+	2	2	0	0	n/a	2	0	0%	5	0	n/a	0	0	0	Missing va	0

Uniq_ID_no	street	city	study site	Q1_no_bldgs	Q2_no_active front	Q3_%_active_front	Q4_dist_bwn_juncs	Q5_no_trees	Q6_pvmt_width	Q7_pvmt_state	Q8_amt_litter	Q9_steps	Q9a_ramp	Q9b_%_steps & ramp	Q10_road Xgs	Q11_dropped_kerbs	Q12_%_dropped kerbs	Q13_no_1ary seat	Q14_no_2ary seat	Q14a_2ary seat type	Q15_bmsgdns	Q16_no_busstops	Q16a_no behelters	Q16b_%_behelters	Q17_landmk type
685	Balfour Rd	Oxford	Blackbird Leys buffer	63	63	76-99%	21-30m	51-100	3m+	2	2	0	0	n/a	8	0	0%	0	0	n/a	1	2	1	0%	0
686	Longlands Rd	Oxford	Blackbird Leys buffer	82	26	26-50%	n/a	21-30	3m+	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
687	Sawpit Rd	Oxford	Blackbird Leys buffer	37	33	76-99%	11-20m	1-10	3 0m	3	2	0	0	n/a	4	0	0%	0	0	n/a	0	0	0	Missing va	0
688	Bley Close	Oxford	Blackbird Leys buffer	35	20	51-75%	n/a	1-10	3m+	3	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
689	Wesley Close	Oxford	Blackbird Leys buffer	6	3	26-50%	n/a	1-10	3m+	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
690	Haldane Rd	Oxford	Blackbird Leys buffer	26	19	51-75%	n/a	1-10	3m+	2	3	0	0	n/a	2	1	41-50%	0	0	n/a	1	0	0	Missing va	0
691	Poulton Place	Oxford	Blackbird Leys buffer	18	0	0%	n/a	11-20	3m+	3	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
692	Warburg Cresc	Oxford	Blackbird Leys buffer	35	5	0-25%	n/a	21-30	3m+	2	3	0	0	n/a	2	0	0%	0	10	wall	0	0	0	Missing va	0
693	Jourdain Rd	Oxford	Blackbird Leys buffer	39	10	0-25%	n/a	11-20	n/a	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
694	Moorbank (off Balfour)	Oxford	Blackbird Leys buffer	21	17	76-99%	n/a	1-10	3m+	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
695	Cuddesdon Way	Oxford	Blackbird Leys buffer	16	12	51-75%	401-500m	51-100	3m+	2	2	2	0	0%	4	4	100%	4	10	mixture of 2+	1	0	0	Missing va	1
696	BlackBird Leys Rd	Oxford	Blackbird Leys buffer	21	18	76-99%	41-50m	31-50	3m+	1	2	0	0	n/a	2	0	0%	11	4	wall	0	1	0	0%	0
697	Merlin Rd	Oxford	Blackbird Leys buffer	44	33	51-75%	151-200m	11-20	3 0m	2	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
698	Knights Rd	Oxford	Blackbird Leys buffer	36	28	76-99%	151-200m	21-30	3 0m	3	2	0	0	n/a	4	2	41-50%	2	2	wall	6	1	0	0%	0
699	WhiteThorn Way	Oxford	Blackbird Leys buffer	32	28	76-99%	n/a	11-20	n/a	1	2	0	0	n/a	0	0	n/a	0	0	n/a	0	0	0	Missing va	0
700	Overmead Garden	Oxford	Blackbird Leys buffer	12	7	51-75%	n/a	1-10	n/a	1	2	2	0	0%	0	0	n/a	0	0	n/a	0	1	0	0%	0
701	Pegasus Rd cont	Oxford	Blackbird Leys buffer	77	71	76-99%	101-150m	101-200	3 0m	2	2	0	0	n/a	8	3	31-40%	1	2	mixture of 2+	0	2	1	41-50%	1
702	Windale Ave	Oxford	Blackbird Leys buffer	36	20	51-75%	201-250m	21-30	3m+	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	1	0	0%	0
703	Field Ave	Oxford	Blackbird Leys buffer	131	81	51-75%	301-400m	101-200	3 0m	2	2	0	0	n/a	16	2	11-20%	0	0	n/a	0	5	0	0%	0
704	Andromeda Cl	Oxford	Blackbird Leys buffer	4	2	26-50%	n/a	1-10	3 0m	1	3	0	0	n/a	6	0	0%	0	0	n/a	0	0	0	Missing va	0
705	Angelica Cl	Oxford	Blackbird Leys buffer	10	10	100%	n/a	11-20	3 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
706	Strawberry Path	Oxford	Blackbird Leys buffer	17	2	0-25%	n/a	1-10	3m+	1	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
707	Butterwort Place	Oxford	Blackbird Leys buffer	10	2	0-25%	n/a	1-10	3 0m	2	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
708	Crowberry Rd	Oxford	Blackbird Leys buffer	40	30	51-75%	31-40m	1-10	3 0m	2	2	0	0	n/a	2	0	0%	1	0	n/a	0	0	0	Missing va	0
709	Bulrush Rd	Oxford	Blackbird Leys buffer	16	16	100%	n/a	11-20	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
710	Clover Place	Oxford	Blackbird Leys buffer	20	10	26-50%	n/a	1-10	3 0m	1	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
711	Flaxfield Rd	Oxford	Blackbird Leys buffer	20	18	76-99%	n/a	1-10	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
712	Gantian Rd	Oxford	Blackbird Leys buffer	18	17	76-99%	n/a	1-10	3 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
713	Lobelia Rd	Oxford	Blackbird Leys buffer	19	13	51-75%	n/a	21-30	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
714	Harebell Rd	Oxford	Blackbird Leys buffer	31	25	51-75%	41-50m	31-50	3m+	2	1	0	0	n/a	6	0	0%	0	0	n/a	0	0	0	Missing va	0
715	Samphire Rd	Oxford	Blackbird Leys buffer	30	22	51-75%	n/a	1-10	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
716	Rest Harrow	Oxford	Blackbird Leys buffer	15	13	76-99%	n/a	1-10	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
717	Clematis Place	Oxford	Blackbird Leys buffer	12	9	51-75%	n/a	0	3 0m	1	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
718	Rampion Close	Oxford	Blackbird Leys buffer	8	5	51-75%	n/a	1-10	3 0m	2	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
719	Sundew Close	Oxford	Blackbird Leys buffer	3	2	51-75%	n/a	11-20	2 0m	2	2	0	0	n/a	2	0	0%	0	1	low fence	0	0	0	Missing va	0
720	Pimpernel Close	Oxford	Blackbird Leys buffer	5	4	76-99%	n/a	1-10	2 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
721	Pennycress Road	Oxford	Blackbird Leys buffer	12	10	76-99%	n/a	1-10	2 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
722	Periwinkle Place	Oxford	Blackbird Leys buffer	20	15	51-75%	n/a	1-10	3 0m	2	1	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
723	Mercury Rd	Oxford	Blackbird Leys buffer	16	14	76-99%	21-30m	1-10	3 0m	2	3	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
724	Marjoram Close	Oxford	Blackbird Leys buffer	12	8	51-75%	n/a	11-20	3 0m	2	2	0	0	n/a	2	0	0%	0	0	n/a	0	0	0	Missing va	0
725	Dunnock Way	Oxford	Blackbird Leys buffer	20	10	26-50%	76-100m	21-30	3m+	1	2	0	0	n/a	6	6	100%	4	0	wall	0	0	-9	0%	0
726	Greenfinch Close	Oxford	Blackbird Leys buffer	20	20	100%	31-40m	11-20	3 0m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	1
727	Shepherds Hill	Oxford	Blackbird Leys buffer	60	40	51-75%	11-20m	51-100	3m+	1	1	0	0	n/a	10	10	100%	0	0	n/a	0	2	0	0%	0
728	Helleborine Close	Oxford	Blackbird Leys buffer	6	6	100%	n/a	1-10	2 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	1
729	Campion Close	Oxford	Blackbird Leys buffer	9	6	51-75%	n/a	1-10	2 0m	1	2	0	0	n/a	2	2	100%	0	2	wall	0	0	0	Missing va	1
730	Chaffinch Walk	Oxford	Blackbird Leys buffer	6	6	100%	n/a	1-10	2 0m	1	3	0	0	n/a	2	2	100%	0	0	n/a	1	0	0	Missing va	1
731	Primrose Place	Oxford	Blackbird Leys buffer	10	10	100%	n/a	1-10	2 0m	1	3	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	1
732	Rowan Grove	Oxford	Blackbird Leys buffer	14	10	51-75%	n/a	21-30	2 0m	1	1	0	0	n/a	2	2	100%	1	1	low fence	0	0	0	Missing va	0
733	Swift Close	Oxford	Blackbird Leys buffer	20	12	51-75%	n/a	1-10	n/a	-1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
734	Brake Hill	Oxford	Blackbird Leys buffer	10	9	76-99%	n/a	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
735	Partridge Walk	Oxford	Blackbird Leys buffer	12	10	76-99%	n/a	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
736	Grenoble Rd	Oxford	Blackbird Leys buffer	11	0	0%	401-500m	300+	2 0m	1	2	0	0	n/a	13	10	71-80%	1	0	n/a	0	4	1	21-30%	6
737	Little Bury	Oxford	Blackbird Leys buffer	30	20	51-75%	21-30m	21-30	3 0m	1	2	0	0	n/a	8	8	100%	0	0	n/a	0	0	0	Missing va	0
738	Redwood Close	Oxford	Blackbird Leys buffer	8	0	0%	21-30m	21-30	3 0m	1	1	0	0	n/a	8	8	100%	0	0	n/a	0	0	0	Missing va	0
739	Reedmace Close	Oxford	Blackbird Leys buffer	30	30	100%	n/a	1-10	3 0m	1	4	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
740	Overbrook Gdns	Oxford	Blackbird Leys buffer	10	8	76-99%	n/a	1-10	3 0m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
741	Three Corners Rd	Oxford	Blackbird Leys buffer	30	25	76-99%	31-40m	1-10	3m+	1	2	0	0	n/a	2	2	100%	0	0	n/a	1	0	0	Missing va	0
742	Brook View	Oxford	Blackbird Leys buffer	12	10	76-99%	n/a	1-10	3 0m	1	1	0	0	n/a	2	1	41-50%	0	0	n/a	0	0	0	Missing va	0
743	Centaury Place	Oxford	Blackbird Leys buffer	30	25	76-99%	n/a	1-10	2 5m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
744	Yew Close	Oxford	Blackbird Leys buffer	7	6	51-75%	n/a	11-20	2 5m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
745	Green Hill	Oxford	Blackbird Leys buffer	47	42	76-99%	11-20m	11-20	3m+	1	1	0	0	n/a	4	4	100%	1	0	n/a	0	0	0	Missing va	0
746	Honeysuckle Grove	Oxford	Blackbird Leys buffer	10	7	51-75%	n/a	1-10	3 0m	1	2	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
747	Hornbeam Dr	Oxford	Blackbird Leys buffer	10	8	76-99%	n/a	31-50	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
748	Thistle Drive	Oxford	Blackbird Leys buffer	20	18	76-99%	n/a	1-10	2 5m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
749	Trefoil Place	Oxford	Blackbird Leys buffer	12	12	100%	n/a	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
750	Bryony Close	Oxford	Blackbird Leys buffer	22	18	76-99%	n/a	1-10	3 0m	1	1	0	0	n/a	2	2	100%	0	0	n/a	0	0	0	Missing va	0
751	Park	Oxford	Blackbird Leys buffer	8	0	0%	76-100m	300+	3m+	1	3	0	0	n/a	8	8	100%	8	1	wall	0	0	0	Missing va	1

Uwq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_ node_ assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ crnrshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest. paths
1	Mushroom Lane	Sheffield	Netherthorpe	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
2	Western Bank	Sheffield	Netherthorpe	1	no	n/a	yes	no	no	0	0	0	1	0	1	0	1
3	Brook Hill	Sheffield	Netherthorpe	1	yes	N3	no	no	no	0	0	0	0	0	0	0	0
4	Winter Street	Sheffield	Netherthorpe	1	no	n/a	no	no	no	0	0	0	0	0	0	1	0
5	Bolsover Street	Sheffield	Netherthorpe	1	yes	N3	no	no	no	0	0	0	0	0	0	0	0
6	Weston St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	ATM	0	1	1	0	1	0	2
7	Dart Square	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
8	Summer Street	Sheffield	Netherthorpe	0	yes	N2	no	no	no	0	0	0	0	0	0	0	0
9	Yardley Sq	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
10	Sutton St	Sheffield	Netherthorpe	1	yes	N2	no	no	no	0	0	0	0	0	2	0	3
11	Mitchell St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
12	Powell St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
13	Bramwell St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
14	Bramwell Dr	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
15	Bramwell Court	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
16	Bramwell Cl	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
17	St. Stephen's Wk	Sheffield	Netherthorpe	0	yes	N1	no	no	no	0	0	0	0	0	1	0	0
18	St. Stephen's Rd	Sheffield	Netherthorpe	2	yes	N3	no	no	no	0	0	0	0	0	1	0	1
19	Finley St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	3
20	Fawcett St	Sheffield	Netherthorpe	1	no	n/a	no	no	no	0	0	0	0	0	0	0	2
21	St. Philip's Rd	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
22	Hammond St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
23	Daisy Bank	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
24	Jericho St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
25	Dover St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
26	Bellefield St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
27	Ellison St	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
28	Netherthorpe St	Sheffield	Netherthorpe	1	no	n/a	no	no	no	0	0	0	0	0	0	0	3
29	Watery St (part)	Sheffield	Netherthorpe	0	yes	N2	no	no	no	0	1	0	1	1	1	0	1
30	Meadow St (one side)	Sheffield	Netherthorpe	0	yes	N2	no	no	no	0	0	0	0	0	1	0	1
31	Netherthorpe Pl	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
32	Dover Gardens	Sheffield	Netherthorpe	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
33	Whitham Road	Sheffield	Netherthorpe buffer	0	yes	N4	no	no	no	3	0	0	7	0	0	0	1
34	Turners Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	1	0	0	0	0	0	0	0
35	Parker's Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
36	Parker's Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
37	Moor Oaks Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
38	Marlborough Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
39	Elmore Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
40	Highnam Crescent Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
41	Crookesmoor Rd	Sheffield	Netherthorpe buffer	2	yes	N3	no	no	no	0	0	0	0	0	1	0	0
42	Redcar Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
43	Conduit Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
44	Northumberland Rd	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
45	Elliott Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
46	Netherthorpe Rd	Sheffield	Netherthorpe buffer	0	yes	N2	no	no	no	0	0	0	0	0	2	0	3
47	Harcourt Rd & Cresc	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
48	Spring Hill	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
49	Commonside	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
50	Moorgate Ave	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	6	1	0	0	1
51	Beehive Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
52	Warrington Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
53	The Nook	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
54	Barber Rd	Sheffield	Netherthorpe buffer	0	yes	N3	no	no	no	0	1	1	3	1	0	0	0
55	Burns Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
56	Roebuck Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	0
57	Sydney Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
58	Springvale Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
59	Wellfield Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
60	Wellfield Close	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
61	Crookesmoor Dr	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
62	Ashberry Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
63	Albion Street	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	1
64	Addy Street	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
65	Addy Dr	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	3
66	Rose Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
67	Leamington St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
68	Upperthorpe Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
69	Brandreth Rd	Sheffield	Netherthorpe buffer	0	yes	N5	no	no	yes	0	2	0	2	1	1	0	2
70	Daniel Hill Terr	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
71	Daniel Hill Walk	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
72	Cleveland St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
73	Westmoreland St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
74	Philadelphia Gdns	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
75	Philadelphia Grove	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
76	Philadelphia Dr	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1

Unsq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_ node_ assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ crnrshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest. paths
77	Albert Terrace Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	1	1	0	0	0	0
78	Infirmary Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	1	2	0	0	0	0
79	Gilpin St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
80	Portland St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	1	0	0	0	0	0	0
81	Cross Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
82	Bedford St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
83	Montgomery Terr Rd	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	1	0	0	0	0	0
84	Malinda St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
85	St. Philip's Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
86	St. Philip's Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
87	Watery Street (rest)	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
88	Henry St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
89	Sudbury St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
90	Springvale Walk	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
91	Oxford St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
92	Tay St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
93	Yeoman's Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
94	Brandreth Close	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
95	Vicar Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
96	Campo Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	1	0	3	1	0	0	2
97	Shalesmoor	Sheffield	Netherthorpe buffer	0	yes	N3	no	no	no	0	0	0	1	1	1	0	0
98	Dun Fields	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
99	Morpeth St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
100	Upper Allen St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
101	Bowling Green St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
102	Alma St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
103	Kelham Island	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
104	Green Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
105	Gibraltar St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
106	Bower Spring	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
107	Spring St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
108	Water St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
109	Bower St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
110	Cotton St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
111	Cotton Mill Row	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
112	Corporation St	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
113	Bridge St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
114	Plum Street	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
115	Love Street	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
116	North Church St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	1
117	Nursery St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
118	West Bar	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
119	Lambert St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
120	Furnace Hill	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
121	Copper St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
122	Trinity St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
123	Scotland St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
124	Snow Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
125	Smithfield	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
126	Martin St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
127	Cross Smithfield	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
128	Allen St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
129	Shepherd St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
130	Ellis St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
131	Matw St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
132	Doncaster St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
133	Ebenezer St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
134	Acorn St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
135	Well Meadow St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
136	Brownell St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
137	Radford St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
138	Leicester Walk	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
139	St George's Cl	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
140	Brook Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
141	Best St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
142	Edward St Flats	Sheffield	Netherthorpe buffer	0	yes	N2	no	no	no	0	0	0	0	0	1	0	4
143	Edward St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
144	Brocco St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
145	Solly St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
146	Siddall St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
147	Garden St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
148	LeavyGreave St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
149	Paradise St	Sheffield	Netherthorpe buffer	0	yes	N2	no	no	no	0	0	0	0	0	0	0	1
150	Lee Croft	Sheffield	Netherthorpe buffer	0	yes	N2	no	no	no	0	0	0	0	0	0	0	0
151	Sims St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
152	Hawley St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0

Uniq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_ node_ assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ crnrshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest_ paths
153	Townhead St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
154	Broad Lane	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	1	0	1	0	1	0	0
155	Trippet Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
156	Batey Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
157	Batey St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
158	Rockingham St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
159	West St (part)	Sheffield	Netherthorpe buffer	0	no	n/a	no	yes	yes	2	0	1	19	1	0	0	0
160	Newcastle St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
161	Portobello St	Sheffield	Netherthorpe buffer	1	yes	N3	no	no	no	0	0	0	0	0	0	0	0
162	Holland St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
163	Mappin St	Sheffield	Netherthorpe buffer	1	yes	N2	no	no	no	0	0	0	1	0	0	0	0
164	Orange St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
165	Pitt St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
166	Regent Street	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
167	Fitzwilliam St	Sheffield	Netherthorpe buffer	2	yes	N4	no	no	no	0	0	1	2	0	1	0	2
168	George's Terrace	Sheffield	Netherthorpe buffer	1	yes	N2	no	no	no	0	0	0	0	0	0	0	0
169	Broomhall St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
170	Gell St	Sheffield	Netherthorpe buffer	1	yes	N4	no	no	no	0	0	0	0	0	1	0	1
171	Cavendish St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	1	0	0	1	0	0	0	2
172	Bolton St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
173	Wilkinson St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
174	Conwy St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
175	Broomspring Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
176	Devonshire St	Sheffield	Netherthorpe buffer	1	yes	N4	no	no	no	0	0	0	3	0	1	0	2
177	Regent Terrace	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
178	Leavy Greave Rd	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
179	Crookes Valley Rd	Sheffield	Netherthorpe buffer	1	yes	N3	no	no	yes	0	1	0	1	1	2	0	1
180	Eldon St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
181	Glossop Rd	Sheffield	Netherthorpe buffer	2	yes	N4	no	yes	no	1	1	0	6	1	1	0	0
182	Brunswick St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
183	Filey St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
184	Gloucester St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
185	Havelock St	Sheffield	Netherthorpe buffer	0	yes	N3	no	no	no	0	0	0	0	0	2	0	3
186	Holberry Close	Sheffield	Netherthorpe buffer	0	yes	N3	no	no	no	0	0	0	0	0	1	0	1
187	Holberry Gardens	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
188	Dorset St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
189	Ruth Square	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
190	Broomfield Rd	Sheffield	Netherthorpe buffer	2	no	n/a	no	no	no	0	0	0	0	0	0	0	0
191	Beech Hill Rd	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
192	Watson Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	2	0	0	0	0	0	0	0
193	Hounsfield Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	1	0	0	1	0	0	0	2
194	Claremont Cresc	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
195	Damer St	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	1	0	0	0	0
196	Upper Hanover Way/ Hanover Way	Sheffield	Netherthorpe buffer	2	yes	N2	no	no	no	0	0	0	0	0	0	0	3
197	Claremont Place	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
198	Shearwood Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
199	Palmerston Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
200	Hoyle St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
201	Durham Rd	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
202	Clarkson St	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
203	Newbould Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
204	Hands Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
205	Upperthorpe	Sheffield	Netherthorpe buffer	0	no	n/a	yes	yes	no	0	0	0	0	0	1	0	1
206	Barber Place	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
207	Victoria St	Sheffield	Netherthorpe buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
208	Adelphi St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
209	Martin Close	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
210	Shipton St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
211	Burlington St	Sheffield	Netherthorpe buffer	0	no	n/a	yes	yes	no	0	0	0	0	0	0	0	0
212	Midvale Ave	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
213	Lock St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
214	Penistone Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
215	Rutland Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	yes	ATM	1	0	0	0	1	0	0
216	Dixon St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
217	Cornish St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
218	Green Lane	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
219	Dun St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
220	Ball Lane	Sheffield	Netherthorpe buffer	0	yes	N1	no	no	no	0	0	0	0	0	0	0	0
221	Mowbray St	Sheffield	Netherthorpe buffer	0	yes	N1	no	no	no	0	0	0	0	0	0	0	0
222	Neepsend Lane	Sheffield	Netherthorpe buffer	0	yes	N1	no	no	no	0	0	0	2	0	0	0	0
223	Burton Rd	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	1	0	2	1	0	0	0
224	Lancaster St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
225	Percy St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
226	Queen St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
227	Silver St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
228	West Bar Green	Sheffield	Netherthorpe buffer	0	yes	N1	no	no	no	0	0	0	0	0	1	0	0

Uniq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_node_assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ cmrshop	Q24_ super market	Q25_rest surant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest. paths
229	Teviot St	Sheffield	Netherthorpe buffer	0	yes	N1	no	no	no	0	0	0	0	0	0	0	0
230	White Croft	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
231	Hollis Croft	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
232	Blue Boy St	Sheffield	Netherthorpe buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
233	Walkley Road	Sheffield	Walkley	0	yes	N2	no	no	no	0	0	0	0	0	0	0	0
234	Palm Street	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
235	Palm Lane	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
236	South Road	Sheffield	Walkley	1	yes	N4	no	no	yes	ATM	2	1	9	2	1	1	0
237	Freedom Road	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
238	Carr Road	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
239	Industry Street	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
240	Hoole Street	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
241	Cundy Street	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	4
242	Walkley Street	Sheffield	Walkley	0	yes	N1	no	no	no	0	0	0	0	0	0	0	0
243	Hadfield Street (E)	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
244	Burgoyne Street	Sheffield	Walkley	0	no	n/a	yes	no	no	0	0	0	0	0	0	0	1
245	Whitehouse Road	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	1	2	0	2
246	Whitehouse Lane	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
247	Tennyson Road	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
248	Hawksworth Road	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
249	Exley Avenue	Sheffield	Walkley	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
250	King James St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
251	Creswick St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
252	Somerville Terr	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
253	Burgoyne Close	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
254	Walkley Road	Sheffield	Walkley buffer	0	yes	N4	no	no	no	0	0	0	0	0	0	0	0
255	Hammerton Road	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
256	Bole Hill Road	Sheffield	Walkley buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	2
257	Rivelin Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
258	Bellhagg Road	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	1	0	0	1	0	0	1
259	Compton Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
260	Parsonage Crescent	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
261	Providence Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
262	Walkley Bank Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	1	0	1	0	2	0	3
263	Morley Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	3	0	3
264	Rivelin Bank	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	1	0	0	0	1	0	1
265	Walkley Lane	Sheffield	Walkley buffer	0	no	n/a	yes	no	no	0	0	0	1	1	0	0	1
266	Bessingby Road	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
267	Carnaby Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
268	Bowness Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
269	Lonsdale Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
270	Kirkstone Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	1	0	1	0	0	0	2
271	Singleton Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
272	Manvers Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
273	Ripley Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
274	Thoresby Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
275	Forbes Rd	Sheffield	Walkley buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
276	Watersmeet Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	4
277	Ped path Watersmeet- Thoresby	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
278	Trickett Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
279	Lark Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
280	Linaker Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
281	Thrush Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
282	Northfield Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	1	0	0	0	0	0	1
283	Northfield Ave	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
284	Western Road	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
285	Langfield Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	1
286	Loxley View Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	1	0	1	0	0
287	Netherfield Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
288	Stothard Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
289	Heavygate Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
290	Aldred Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
291	Matlock Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
292	Hadfield St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
293	Cromwell St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	1	0	0	1	0	0	0	0
294	Duncombe St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
295	Fulton Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
296	Fir Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
297	Orchard Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
298	Parsonage Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	1
299	Fern Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
300	Langsett Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	12	1	1	0	1
301	Walkley Crescent Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
302	Speston Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
303	Limbrick Close	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
304	Limbrick Rd	Sheffield	Walkley buffer	0	no	n/a	yes	no	no	0	0	0	0	0	0	0	0

Uniq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_ node_ assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ crmrshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest. paths
305	Dodd St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
306	Halton Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
307	Birkendale Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
308	Howard Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	1	0	1	0	0
309	Welbeck Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
310	Welbeck Valley Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	2
311	Sinn Street	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
312	Cannon St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
313	Moorsyde Cresc	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
314	Moorsyde Ave	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
315	Heavygate Ave	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
316	Highton St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
317	Greenhow Steet	Sheffield	Walkley buffer	0	no	n/a	yes	yes	no	0	0	0	0	0	0	0	0
318	Bradley St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
319	Northfield Cl	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
320	Pennstone Rd	Sheffield	Walkley buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
321	Racker Way	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
322	Lister Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
323	Arnold St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
324	Walkley Bank Close	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
325	Walkley Terr	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
326	Robertson Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
327	Robertson Dr	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
328	Storrs Hall	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
329	Hawthorne St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
330	Hammerton Cl	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
331	Compton St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
332	Bates St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
333	Townend Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
334	Ibbotson Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
335	Gresham Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
336	Stony Way	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
337	Woodview Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
338	Elliottville St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
339	River Terr	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
340	Springvale Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
341	Mona Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
342	Boyce St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
343	Blake St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
344	Fox Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	2
345	Sherde Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
346	Bransby St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
347	Daniel Hill Court/ Melbourn Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
348	Melbourn Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
349	Birkendale View	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
350	Brighton Terr Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
351	Daniel Hill St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
352	Harold St	Sheffield	Walkley buffer	0	no	n/a	yes	no	no	0	0	0	0	0	0	0	5
353	Wales Pl & Otley Wlk	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	3	0	5
354	Singleton Grove & Cresc	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
355	Cobden View Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
356	Western Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
357	Normandale Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	0
358	Portland Ct	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
359	West Don St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
360	Balaclava Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
361	Barrack Lane	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
362	Flora St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
363	Wood St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
364	Ash St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
365	Lime St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
366	Langsett Cresc & Freedom Ct	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
367	Grammar St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
368	Greaves St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	8
369	Langsett Walk et al	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	3
370	Creswick Way & St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
371	Cuthbert Bank Rd	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
372	Primrose Hill	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
373	Barnforth St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	1
374	Victor St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
375	Burnaby St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
376	Burnaby Cresc & Ct	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
377	Grouse Croft	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	3
378	Burnaby Grn	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
379	Majuba St	Sheffield	Walkley buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
380	Redmires Road	Sheffield	Fulwood	1	no	n/a	yes	yes	yes	ATM	1	0	0	1	12	0	8

Uniq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_ node_ assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ cnrshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest. paths
381	Rochester Road	Sheffield	Fulwood	0	no	n/a	yes	yes	no	ATM	1	0	0	1	1	0	0
382	Rochester Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
383	Blackbrook Rd	Sheffield	Fulwood	3	no	n/a	yes	no	no	0	0	0	0	0	1	0	4
384	Worcester Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
385	Worcester Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
386	Crimicar Lane	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	2	0	2
387	Peterborough Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
388	Peterborough Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
389	Peterborough Cl	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
390	Westminster Cres	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	3	0	6
391	Westminster Ave	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	2	0	3
392	Westminster Cl	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
393	Barncliffe Cresc	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
394	Barncliffe Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	1	1	0	1	0	0	0
395	Barncliffe Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
396	Barncliffe Cl	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
397	Barncliffe Glen	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
398	Hallam Grange Rise	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
399	Hallam Grange Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
400	Hallam Grange Cresc	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
401	St Albans Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
402	St Albans Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
403	St Albans Cl	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
404	Hallamshire Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
405	Hallamshire Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
406	Hallamshire Cl	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
407	Crimicar Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
408	Crimicar Ave	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
409	Winchester Cresc	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
410	Winchester Rd	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	1	1	0	0	0	1
411	Winchester Dr	Sheffield	Fulwood	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
412	Winchester Ave	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
413	Blackbrook Rd ext	Sheffield	Fulwood buffer	3	no	n/a	yes	no	no	0	0	0	0	0	1	0	4
414	Lodge Lane	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	1
415	The Fairway	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
416	Blackbrook Ave	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
417	Blackbrook Dr	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
418	Lodge Moor Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
419	The Pines	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
420	Moorside	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
421	Moorcroft Close	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
422	Moorcroft Dr	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	1
423	Moorcroft Ave	Sheffield	Fulwood buffer	0	yes	N1	no	no	no	0	0	0	0	0	0	0	0
424	Moorcroft Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
425	Brooklands Ave	Sheffield	Fulwood buffer	0	yes	N4	no	no	yes	0	1	1		1	0	0	0
426	School Green Lane	Sheffield	Fulwood buffer	0	yes	N2	no	no	no	0	0	0	0	0	2	0	4
427	Brooklands Dr	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
428	Whitfield Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
429	Whiteley Lane	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
430	Brooklands Cresc	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
431	Brookhouse Hill	Sheffield	Fulwood buffer	1	yes	N4	no	no	no	0	0	0	0	1	0	0	0
432	Castlewood Cresc	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
433	Castlewood Dr	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
434	Castlewood Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
435	Canterbury Cresc	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
436	Chorley Road	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
437	Silver Birch Ave	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
438	Chorley Place	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
439	Stumperlowe Hall Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
440	Slayleigh Ave	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
441	Stone Delf	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
442	Stumperlowe View	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
443	Stumperlowe Croft	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
444	Hillcote Close	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
445	Hillcote Dr	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
446	Tom Lane	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
447	Hallam Grange Croft	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
448	Hallam Grange Close	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
449	Slayleigh Lane	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
450	Fulwood Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
451	Stumperlowe Lane	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
452	Hillcote Mews	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
453	Hillcote Rise	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
454	Carsick View Rd	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
455	Pitchford Lane	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
456	The Ridge	Sheffield	Fulwood buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0

Unique_ID_no	street	city	study site	Q17_no landmrk	Q18_node present	Q18a_ node_ access	Q19_GP	Q20_ chemist	Q21_ postoff	Q22_ bank	Q23_ crwnshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no pedest. paths
457	[illegible]	[illegible]	[illegible]	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
458	Walton Street (5)	Oxford	Jericho	0	yes	N3	no	no	yes	ATM	0	1	4	0	0	0	0
459	Walton Street (94)	Oxford	Jericho	0	no	n/a	yes	yes	no	0	0	0	2	0	0	0	0
460	Jowett Street	Oxford	Jericho	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
461	Cranham Terrace	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
462	Venables Close	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
463	Albion Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
464	Mount Street	Oxford	Jericho	1	yes	N2	no	no	no	0	0	0	0	0	1	0	1
465	Mount Place	Oxford	Jericho	1	yes	N2	no	no	no	0	0	0	0	0	1	0	1
466	Canal Street	Oxford	Jericho	1	yes	N2	no	no	no	0	0	0	0	0	1	0	1
467	Combe Rd	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
468	Dawson Place	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
469	St. Barnabas St	Oxford	Jericho	1	no	n/a	no	no	no	0	0	0	0	0	1	0	0
470	Nelson Street	Oxford	Jericho	0	yes	N2	no	no	no	0	0	0	0	0	0	0	0
471	Wellington Street	Oxford	Jericho	1	yes	N2	no	no	no	0	0	0	0	0	0	0	0
472	Gt. Clarendon Street	Oxford	Jericho	1	yes	N3	no	yes	yes	ATM	1	0	0	0	1	0	1
473	School Court	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
474	Albert Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
475	Hart Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
476	Cardigan Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
477	Victor Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
478	Cranham Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
479	King Street	Oxford	Jericho	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
480	Jericho Street	Oxford	Jericho	0	no	n/a	yes	no	no	0	0	0	0	0	0	0	0
481	Walton Crescent	Oxford	Jericho	2	yes	N3	no	no	no	0	0	0	1	0	0	0	0
482	Kingston Road	Oxford	Jericho buffer	1	yes	N3	no	no	no	0	0	0	0	0	0	0	0
483	Walton Well Road	Oxford	Jericho buffer	0	yes	N3	no	no	no	0	0	0	0	0	1	0	2
484	Longworth Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
485	Southmoor Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
486	Southmoor Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
487	Rutherway	Oxford	Jericho buffer	0	yes	N2	no	no	no	0	0	0	0	0	1	0	1
488	The Crescent	Oxford	Jericho buffer	0	yes	N2	no	no	no	0	0	0	0	0	1	0	1
489	Farndon Road	Oxford	Jericho buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
490	Tackley Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
491	Leckford Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
492	Plantation Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
493	St Bernard's Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
494	Arthur Grd Close	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
495	Walton Manor Court	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
496	Belsyre Court	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
497	Woodstock Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
498	Adelaide Street	Oxford	Jericho buffer	0	no	n/a	no	yes	yes	1	1	0	5	2	1	0	2
499	Observatory Street	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
500	Little Clarendon St.	Oxford	Jericho buffer	0	yes	N4	no	yes	yes	1	0	0	4	1	0	0	0
501	Walton Lane	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
502	Richmond Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
503	Worcester Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
504	Walton Street cont.	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
505	Worcester Street	Oxford	Jericho buffer	0	yes	N2	no	no	no	0	0	0	0	0	0	0	0
506	Beaumont Street	Oxford	Jericho buffer	1	yes	N3	no	no	no	0	0	0	0	0	1	0	1
507	St. John Street	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
508	Pusey Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
509	Pusey Lane	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
510	Pusey Street	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
511	Beaumont Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
512	Wellington Square	Oxford	Jericho buffer	0	yes	N4	no	no	no	0	0	0	0	0	0	0	0
513	St Giles	Oxford	Jericho buffer	1	yes	N3	no	no	no	0	0	0	0	0	1	0	1
514	Merrivale Square	Oxford	Jericho buffer	1	yes	N3	no	yes	yes	1	0	0	3	1	1	1	1
515	Hayfield Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
516	Chalfont Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	1	0	0	1	0	0	0
517	Aristotle Lane	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	0	0	0	0	0	0	0
518	Polstead Road	Oxford	Jericho buffer	0	yes	N4	no	no	no	0	0	0	0	0	1	0	4
519	St. Margaret's Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
520	Plater Drive	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
521	Balliol Court	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
522	The Villas	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
523	Warnborough Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
524	Leckford Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
525	Canterbury Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
526	Church Walk	Oxford	Jericho buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	0
527	North Parade	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
528	Winchester Road	Oxford	Jericho buffer	0	no	n/a	no	no	yes	0	2	0	7	1	0	0	0
529	Norham Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
530	Bradmore Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
531	Crick Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
532	Norham Gardens	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0

Unq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_node_access	Q19_GP	Q20_chemist	Q21_poffice	Q22_bank	Q23_crnrshop	Q24_super market	Q25_rest aurant	Q26_news agent	Q27_open space	Q28_total	Q29_no pedest. paths
533	Beaumont Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
534	Parks Road	Oxford	Jericho buffer	0	yes	N3	no	no	no	0	0	0	0	0	1	0	3
535	South Parks Road	Oxford	Jericho buffer	0	yes	N2	no	no	no	0	0	0	0	0	1	0	0
536	Magdalen Street	Oxford	Jericho buffer	1	yes	N5	no	no	no	ATM	0	1	1	0	1	0	0
537	Commercial Street	Oxford	Jericho buffer	1	yes	N5	no	yes	no	3	0	0	5	1	0	0	1
538	Broad Street	Oxford	Jericho buffer	1	yes	N5	no	no	no	0	0	0	3	1	0	0	0
539	Ship Street	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	0	0	3	0	1	0	0
540	Gloucester St	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	0	0	3	0	1	0	0
541	Gloucester Place	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	4	0	0	0	1
542	Gloucester Green	Oxford	Jericho buffer	1	yes	N4	no	no	no	ATM	0	0	5	1	1	0	2
543	Gloucester Lane	Oxford	Jericho buffer	0	yes	N5	no	no	no	0	0	0	3	0	0	1	0
544	George Street	Oxford	Jericho buffer	1	yes	N5	no	no	no	3	0	0	14	1	0	0	1
545	Bulwarks Lane	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
546	New Road	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	0	0	1	0	0	0	0
547	Hythe Bridge Street	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	0	1	3	0	1	0	2
548	Park End St (station)	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	1	0	4	1	0	0	1
549	Rewley Road	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
550	Great Mead	Oxford	Jericho buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	1
551	Upper Fisher Row	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
552	University Parks	Oxford	Jericho buffer	1	yes	N4	no	no	no	0	0	0	0	0	1	0	10
553	Banbury Rd	Oxford	Jericho buffer	1	no	n/a	no	no	no	0	0	0	2	0	0	0	3
554	Keble Rd	Oxford	Jericho buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	0
555	Blackhall Rd	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
556	Museum Rd	Oxford	Jericho buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
557	Abingdon Rd (S)	Oxford	Grandpont	0	no	n/a	no	no	no	0	1	0	0	0	1	0	0
558	Abingdon Rd (N)	Oxford	Grandpont	1	no	n/a	no	no	no	0	0	0	0	0	1	0	0
559	Edith Road	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
560	Chilswell Road	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	4
561	Newton Rd	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
562	Marlborough Rd (S)	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
563	Marlborough Rd (N)	Oxford	Grandpont	1	no	n/a	no	no	no	0	0	0	0	0	0	0	2
564	Kineton Rd	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
565	Hodges Court	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
566	Pegasus Grange	Oxford	Grandpont	1	no	n/a	no	no	no	0	0	0	0	0	1	0	0
567	Whitehouse Rd	Oxford	Grandpont	1	no	n/a	no	no	no	0	0	0	0	0	1	0	3
568	Salter Close	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	2	0	2
569	Longford Close	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
570	Western Road	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
571	Riverside Court	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
572	Buckingham St.	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
573	Brook St.	Oxford	Grandpont	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
574	Cobden Crescent	Oxford	Grandpont	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
575	Jubilee Terrace	Oxford	Grandpont	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
576	Lake Street	Oxford	Grandpont buffer	1	no	n/a	yes	no	no	0	0	0	0	0	1	0	3
577	Summerfield Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
578	Gordon Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
579	Vicarage Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
580	Vicarage Road	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
581	Stewart Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
582	School Place	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
583	Green Place	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
584	Wytham Street	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	3
585	Norreys Avenue	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
586	Sunningwell Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
587	Lincoln Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	0	0
588	Monmouth Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
589	Varsity Place	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
590	Northampton Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
591	Oswestry Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
592	Weirs Road	Oxford	Grandpont buffer	0	no	n/a	no	yes	yes	0	2	0	0	0	0	0	0
593	Chatham Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
594	Abingdon Road (south of Hinksey Pk)	Oxford	Grandpont buffer	1	no	n/a	no	yes	yes	0	2	1	1	1	1	0	1
595	Friars Wharf	Oxford	Grandpont buffer	1	yes	N2	no	no	no	0	0	0	0	0	1	0	4
596	Dale Close	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
597	Trinity Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
598	Sadler Walk	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
599	Blackfriars Road	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
600	Preachers Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
601	St Aldates	Oxford	Grandpont buffer	1	yes	N5	no	no	yes	1	0	0	4	1	1	0	1
602	Thames Street	Oxford	Grandpont buffer	0	yes	N3	no	no	no	0	0	0	0	0	1	0	2
603	Oxpens Road	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	1	0	0	0	1	0	2
604	Osney Lane	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
605	Luther Close	Oxford	Grandpont buffer	1	no	n/a	yes	no	no	0	0	0	0	0	0	0	1
606	Luther Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
607	Butterwyke Place	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
608	Cromwell Street	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0

Unq_ID_no	street	city	study site	Q17_no landmrk	Q18_node present	Q18a_node_assess	Q19_GP	Q20_chemist	Q21_poffice	Q22_bank	Q23_crwnshop	Q24_supermarket	Q25_restaurant	Q26_newsagent	Q27_opensspace	Q28_toilet	Q29_no pedest_paths
609	Speedwell Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	1	1
610	Old Greyfriars Street	Oxford	Grandpont buffer	1	yes	N2	no	no	no	0	0	0	0	0	0	0	1
611	Norfolk Street	Oxford	Grandpont buffer	1	yes	N1	no	no	no	0	0	0	0	0	1	0	1
612	Paradise Square	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
613	Paradise Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
614	St. Thomas s Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
615	The Hamel	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
616	Ped. path (St.Thomas's to The Hamel)	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
617	Woodbine Place	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
618	Marsh Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
619	New Road	Oxford	Grandpont buffer	1	yes	N4	no	no	no	0	0	0	1	0	0	0	0
620	Castle Street	Oxford	Grandpont buffer	0	yes	N4	no	no	no	0	0	0	0	0	0	1	0
621	Bulwarks Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
622	Queen Street	Oxford	Grandpont buffer	2	yes	N5	no	no	no	1	0	0	4	0	1	1	2
623	New Inn Hall Street	Oxford	Grandpont buffer	2	yes	N5	no	no	no	1	1	0	1	1	1	0	1
624	Shoe Lane	Oxford	Grandpont buffer	1	yes	N4	no	no	no	1	0	0	0	0	0	0	1
625	Commarket	Oxford	Grandpont buffer	0	yes	N5	no	yes	no	3	0	0	5	1	0	0	1
626	Market Street	Oxford	Grandpont buffer	1	yes	N4	no	yes	no	0	0	0	0	0	0	1	1
627	High Street	Oxford	Grandpont buffer	1	yes	N5	no	no	no	2	0	0	12	1	0	0	1
628	Alfred Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	1	0	0	0	0	0	0	0
629	Blue Boar Street	Oxford	Grandpont buffer	0	yes	N2	no	no	no	0	0	0	0	0	0	0	1
630	Bear Lane	Oxford	Grandpont buffer	0	yes	N2	no	no	no	0	0	0	0	0	0	0	1
631	King Edward Street	Oxford	Grandpont buffer	1	yes	N2	no	no	no	0	0	0	0	0	0	0	0
632	Oriel Street	Oxford	Grandpont buffer	0	yes	N2	no	no	no	0	0	0	0	0	0	0	1
633	Oriel Square	Oxford	Grandpont buffer	1	yes	N2	no	no	no	0	0	0	0	0	0	0	0
634	Merton Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
635	Deadman's Walk	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
636	Broad Walk	Oxford	Grandpont buffer	2	yes	N1	no	no	no	0	0	0	0	0	0	0	1
637	The New Walk	Oxford	Grandpont buffer	1	yes	N1	no	no	no	0	0	0	0	0	0	0	1
638	Floyds Row	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
639	Trill Mill Court	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
640	St. Ebbes Street	Oxford	Grandpont buffer	0	yes	N5	no	no	no	0	0	0	1	0	0	0	1
641	Pembroke Street	Oxford	Grandpont buffer	0	yes	N3	no	no	no	0	0	0	0	0	0	0	1
642	Beef Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
643	Pembroke Square	Oxford	Grandpont buffer	1	no	n/a	no	no	no	0	0	0	1	0	0	0	1
644	Brewer Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
645	Rose Place	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
646	Roger Bacon Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
647	Turn Again Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
648	Pike Terrace	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
649	Faulkner Street	Oxford	Grandpont buffer	0	yes	N1	no	no	no	0	0	0	0	0	1	0	1
650	Albion Place	Oxford	Grandpont buffer	1	yes	N2	no	no	no	0	0	0	0	0	0	0	0
651	Cambridge Terrace	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
652	Shire Lake Close	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
653	Magpie Lane	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
654	Kybald Street	Oxford	Grandpont buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
655	Cuddesdon Way	Oxford	Blackbird Leys	1	no	n/a	no	no	no	0	0	0	0	0	0	0	4
656	Comfrey Rd	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
657	Watlington Rd (to Blackberry Lane)	Oxford	Blackbird Leys	1	no	n/a	no	no	no	0	0	0	1	0	0	0	2
658	Berry Close	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
659	Pegasus Rd	Oxford	Blackbird Leys	1	yes	N3	no	no	no	0	0	0	0	0	1	0	3
660	Pegasus Court	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
661	Juniper Drive	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
662	Erica Close	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
663	Briar Way	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
664	Jasmine Close	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
665	Sorrel Road	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
666	Prunus Close	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
667	Pine Close	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
668	Ashmole Place	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	6
669	Timothy Way	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
670	Vetch Place	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
671	Woodruff Place	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
672	Blackberry Lane	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
673	Field Avenue	Oxford	Blackbird Leys	0	no	n/a	no	no	no	0	0	0	0	0	3	0	9
674	Ambassador Ave	Oxford	Blackbird Leys buffer	1	yes	N4	no	no	no	ATM	0	1	2	0	0	1	2
675	Retail Park	Oxford	Blackbird Leys buffer	1	yes	N4	no	no	no	ATM	0	1	2	0	0	1	2
676	Watlington Road	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	5
677	Ashville Way	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
678	Transport Way	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
679	Oxford Road	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
680	Sandy Lane	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	1
681	Druce Way	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	3
682	Tucker Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
683	Ladenham Rd off Sandy Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
684	Ladenham Rd off Balfour Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0

Unq_ID_no	street	city	study site	Q17_no landmk	Q18_node present	Q18a_ node_ assess	Q19_GP	Q20_ chemist	Q21_ poffice	Q22_ bank	Q23_ crmrshop	Q24_ super market	Q25_rest aurant	Q26_ news agent	Q27_ open space	Q28_ toilet	Q29_no podest. paths
645	Balfour Rd	Oxford	Blackbird Leys buffer	0	yes	N3	0	0	yes	0	1	0	0	1	0	0	0
686	Langlands Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	5
687	Sawpit Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
688	Bay Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
689	Wessex Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
690	Haldane Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
691	Poulton Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
692	Warburg Cresc	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
693	Jourdain Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	4
694	Moorbank (off Balfour)	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
695	Cuddesdon Way	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
696	BlackBird Leys Rd	Oxford	Blackbird Leys buffer	1	yes	N5	no	no	no	0	0	0	0	0	1	0	1
697	Merlin Rd	Oxford	Blackbird Leys buffer	0	yes	N5	no	yes	no	ATM	1	0	2	0	1	0	1
698	Knights Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	3
699	WhiteThorn Way	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
700	Overmead Garden	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	2	0	1	0	2
701	Pegasus Rd cont	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
702	Windale Ave	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
703	Field Ave	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	0
704	Andromeda Cl	Oxford	Blackbird Leys buffer	0	yes	N3	no	no	no	0	0	1	0	1	1	0	0
705	Angelica Cl	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
706	Strawberry Path	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
707	Butterwort Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
708	Crowberry Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
709	Bulrush Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
710	Clover Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
711	Flaxfield Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
712	Gentian Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
713	Lobelia Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
714	Harebell Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
715	Samphire Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	0
716	Rest Harrow	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
717	Clematis Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
718	Rampion Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
719	Sundew Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
720	Pimpernel Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
721	Pennycress Road	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
722	Periwinkle Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
723	Mercury Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
724	Marjoram Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	1	0	0	2	0
725	Dunnock Way	Oxford	Blackbird Leys buffer	0	yes	N3	yes	0	0	0	0	1	0	0	2	0	3
726	Greenfinch Close	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
727	Shepherds Hill	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	2
728	Helleborine Close	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	1
729	Campion Close	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
730	Chaffinch Walk	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	1
731	Primrose Place	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	0	0	0
732	Rowan Grove	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	1
733	Swift Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
734	Brake Hill	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
735	Partridge Walk	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
736	Grenoble Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
737	Little Bury	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	2	0	2
738	Redwood Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
739	Reedmace Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
740	Overbrook Gdns	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
741	Three Corners Rd	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
742	Brook View	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
743	Centaury Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
744	Yew Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
745	Green Hill	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	1	0	2
746	Honeysuckle Grove	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
747	Hornbeam Dr	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	1
748	Thistle Drive	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
749	Trefoil Place	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
750	Bryony Close	Oxford	Blackbird Leys buffer	0	no	n/a	no	no	no	0	0	0	0	0	0	0	0
751	Park	Oxford	Blackbird Leys buffer	1	no	n/a	no	no	no	0	0	0	0	0	1	0	3

Appendix C

Semi-Structured Interview

OXFORD BROOKES UNIVERSITY

YOUR NEIGHBOURHOOD

The Sustainable Urban Form Consortium CITY FORM

I would like you to answer some questions about your neighbourhood. These questions are not of a sensitive nature. However, if you feel you are unable, or do not wish, to answer any questions, you can leave them blank. All the information that you give me will be kept strictly private and confidential. Completing these questions should take around 20 minutes.

1. **Firstly, how long have you lived in your neighbourhood?**

2. **If someone asked you which part of OXFORD/ SHEFFIELD you live in, what would you say?**

3. **Can you tell me which streets, buildings and other features mark the boundary of your neighbourhood?**
   Alternatively, can you tell me which streets make up your neighbourhood?

4. **How would you describe your neighbourhood to someone who has never been there before? And how would you describe the people who live there?**

5. **Would you say that your neighbourhood has its own character (or particular quality)?**

☐ Yes ☐ No ☐ Don't know

6. Can you describe this character or particular quality?

7. What is it that makes your neighbourhood different to other neighbourhoods?

8. In your opinion, what are the ingredients of a high quality neighbourhood?

9. If you had to rate the quality of your neighbourhood out of 10, how would you rate it?

Please indicate below <u>why</u> you gave it that score.

/ 10

10. How attached do you feel to your neighbourhood?

- ☐ Very attached
- ☐ Fairly attached
- ☐ Not very attached
- ☐ Not at all attached
- ☐ Don't know

11. Thinking about your neighbourhood, how strong a sense of community is there where you live?

- ☐ Very strong
- ☐ Fairly strong
- ☐ Not very strong
- ☐ No sense of community
- ☐ Don't know

12. How well would you say that people in your neighbourhood get on together?

☐ Very well ☐ Quite well ☐ Not very well ☐ Not at all well ☐ Don't know

13. I want to ask you about whether you trust people in your neighbourhood. Would you say that you trust...

☐ Most ☐ Some ☐ A few ☐ None ☐ All ☐ Don't know

...of the people in your neighbourhood?

14. Thinking about neighbourhoods in general, can you tell me if any of the following things have an effect on <u>how safe you might feel in a neighbourhood</u>? Please indicate if they have a positive effect, negative effect or no effect.

	Positive Effect	No Effect	Negative Effect	Don't Know
Rubbish or litter lying around	☐	☐	☐	☐
Vandalism and graffiti	☐	☐	☐	☐
Other people's homes and gardens in poor condition	☐	☐	☐	☐
Pavements and roads in poor condition	☐	☐	☐	☐
An attractive neighbourhood	☐	☐	☐	☐
A bus stop nearby	☐	☐	☐	☐
Well-maintained open spaces (e.g. parks)	☐	☐	☐	☐
A neighbourhood that is easy to walk around	☐	☐	☐	☐
Lots of people out and about	☐	☐	☐	☐
Other houses overlooking yours	☐	☐	☐	☐
Well-lit streets	☐	☐	☐	☐
Anything else you would like to add	☐	☐	☐	☐

15. Would you say that any of the following things have an effect on <u>the opportunity you have to talk to people in a neighbourhood</u>? *(I do not assume that you talk to your neighbours or other people in your neighbourhood, but would ask you to think about the opportunities you might have to talk to people within your neighbourhood).*

	Positive Effect	No Effect	Negative Effect	Don't Know
Litter, vandalism and graffiti	☐	☐	☐	☐
The environment (roads, pavements, houses, parks etc) in good condition	☐	☐	☐	☐
High volume of road traffic	☐	☐	☐	☐
Good provision of local services and facilities (such as shops and schools)	☐	☐	☐	☐
Good provision of public open spaces (e.g. parks)	☐	☐	☐	☐
A neighbourhood that is easy to walk around	☐	☐	☐	☐
An attractive neighbourhood	☐	☐	☐	☐
A bus stop nearby	☐	☐	☐	☐
Places to sit (such as benches, walls and bus shelters)	☐	☐	☐	☐
Feeling safe in a neighbourhood	☐	☐	☐	☐
Anything else you would like to add	☐	☐	☐	☐

16. Would you say any of the following things have an effect on <u>the sense of community</u> in a neighbourhood? Please indicate if these things have a positive effect, negative effect or no effect.

	Positive Effect	No Effect	Negative Effect	Don't Know
Good provision of local services and facilities	☐	☐	☐	☐
Good provision of public open spaces	☐	☐	☐	☐
The environment in good condition (roads, pavements, houses, parks etc)	☐	☐	☐	☐
Litter, vandalism and graffiti	☐	☐	☐	☐
An attractive neighbourhood	☐	☐	☐	☐
Lots of people out and about	☐	☐	☐	☐
A neighbourhood that is easy to walk around	☐	☐	☐	☐
Feeling safe in a neighbourhood	☐	☐	☐	☐
The character of the neighbourhood	☐	☐	☐	☐
Anything else you would like to add	☐	☐	☐	☐

17. Thinking about people taking part in activities in a neighbourhood *(activities such as evening classes, exercise classes and community groups)*, would you say any of the following things encourage or discourage you from participating in activities, or have no effect?

	Encourage	Neither encourage nor discourage	Discourage	Don't Know
Good provision of local services and facilities	☐	☐	☐	☐
Good provision of public open spaces	☐	☐	☐	☐
The environment in good condition (roads, pavements, houses, parks etc)	☐	☐	☐	☐
Litter, vandalism and graffiti	☐	☐	☐	☐
An attractive neighbourhood	☐	☐	☐	☐
A frequent transport service	☐	☐	☐	☐
A neighbourhood that is easy to walk around	☐	☐	☐	☐
Feeling safe in a neighbourhood	☐	☐	☐	☐
Anything else you would like to add	☐	☐	☐	☐

18. Would you say that any of the following things have an effect on how attached you feel to a neighbourhood? Please indicate if these things have a positive effect, negative effect or no effect.

	Positive Effect	No Effect	Negative Effect	Don't Know
Good provision of local services and facilities	☐	☐	☐	☐
Good provision of public open spaces	☐	☐	☐	☐
The environment in good condition (roads, pavements, houses, parks etc)	☐	☐	☐	☐
Litter, vandalism and graffiti	☐	☐	☐	☐
Well-maintained public spaces (parks)	☐	☐	☐	☐
An attractive neighbourhood	☐	☐	☐	☐
Feeling safe in a neighbourhood	☐	☐	☐	☐
A neighbourhood that is easy to walk around	☐	☐	☐	☐
Lots of people out and about	☐	☐	☐	☐
Anything else you would like to add	☐	☐	☐	☐

And one final question...

19. Taking into account the things you have been asked about, in your opinion, does living in a high quality neighbourhood make people more or less likely to get on well with each other?

☐ More likely
☐ Less likely
☐ No effect
☐ Don't know

This is the end of the questions. I would like to thank you very much for giving up your time to do this. It is greatly appreciated. The information that you have given me will be kept strictly confidential and anonymous, and stored securely under lock and key. The analyses and conclusions of the interviews will be published in articles and also in the PhD thesis, which you will be able to consult at Oxford Brookes University once it is completed late next year.

Thank you very much for your time and help in completing these questions.

Nicola Dempsey
PhD Researcher
Oxford Brookes University
Tel: 01865 483349
Email: **ndempsey@brookes.ac.uk**

Appendix D

The Study Sites

Appendix E

Correlation Analyses

Table E.1 Relationships between high residential density and dimensions of social cohesion

Spearman's rho correlation coefficient		Density variables						
Social Cohesion variables		dens_gr	dens_gr_hha	rat_bl_os	dens_net	dens_net_hha	dens_hhold	str_intens
Social Interaction	see_neigh	-0 089*	-0 079*			-0 074*		
	chat_neigh	-0.114**	-0 135**	-0.103**	-0 099**	-0 129**	.100**	-0.082*
	borrow_neigh				0 101**		0.171**	-0 127**
	name_neigh	-0 135**	-0.150**	-0 089*	-0 132**	-0 172**	0 127**	-0.129**
	nocon_neigh	-0.202**	-0 181**		-0.188**	-0 163**		-0 089*
	avoid_neigh		-0 105**	-0 081*			0.107**	-0 116**
Social Networks	socialise						0.110**	-0 080*
	see_friends							
	num_friends		-0 072*					
Sense of community	proud	-0.191**	-0 227**		-0 111**	-0 192**	0 114**	-.175**
	look_out	-0.129**	-0.161**	-0 073*	-0 082*	-0 130**	0 111**	- 152**
	friendly	-0 074*	-0 109**					-0 106**
	bckground							
	SSI_get_on							
	SSI_socomm							
Participation in organized activities	sports_grp						088*	
	adult_ed							
	comm_grp							
	support_grp							
	religious_grp		-.073*			-0.085*		
	other_grp	-0 114**	-0 140**		-0 084*	-0.144**	0 121**	-0 113**
Trust and reciprocity	look_out	-0.129**	-0 161**	-0.073*	-0 082*	-0.130**	0 111**	-.152**
	SSI_trust		-0 239**					-0 206*
	favour	-0 161**	-0 193**	-0 093**	-0 123**	-0.172**	.122**	-0 092**
Safety	safe							-0 087*
	crime		-0 081*					
Sense of place attachment	proud	-0 191**	-0.227**		-0.111**	-0.192**	0 114**	-.175**
	belong	-0.132**	-0.160**		-0 082*	-0 137**	0 088*	-0 119**
	SSI_attach							-0 236*

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.2 Relationships between mixed land uses and dimensions of social cohesion

Spearman's rho correlation coefficient		Mixed land use variables					
Social Cohesion variables		no_servs	servs_ha	serbuff	serbuff_ha	rat_resl	spr_ser
Social Interaction	see_neigh	-0 097**	-0 095**				
	chat_neigh			-0.146**	-0.088*	0.077*	
	borrow_neigh						0.181**
	name_neigh	-0.105**	-0 102**	-0 166**	-0.143**		
	nocon_neigh	-0 074*	-0 074*	-0 076*			-0.119**
	avoid_neigh			-0 099**			
Social Networks	socialise						0.098**
	see_friends						
	num_friends			-0 093**			
Sense of community	proud	-0.111**	-0.125**	-0 172**			-0.071*
	look_out		-0 069*	-0.135**	-0.092*		
	friendly			-0.090**			
	bckground						
	SSI_get_on						0 226*
	SSI_socomm						
Participation in organized activities	sports_grp						0.103**
	adult_ed						
	comm_grp						
	support_grp						
	religious_grp			-0 109**	-0 083*		
	other_grp	-0 103**	-0 106**	-0 136**	-0 110**		
Trust and reciprocity	look_out		-0 069*	-0 135**	-0.092*		
	SSI_trust						
	favour			-0 188**	-0 099*	-0 072*	
Safety	safe	0 087*		-0.093*			
	crime	0 092*	0 076*	-0 095**		0.095**	-0.099**
Sense of place attachment	proud	-0 111**	-0 125**	-0.172**			-0 071*
	belong	-0 069*	-0 080*	-0 138**			
	SSI_attach						

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.3 Relationships between accessibility and dimensions of social cohesion

Spearman's rho correlation coefficient		Accessibility variables				
Social Cohesion variables		open_sp	open_buff	no_bus	sprd_bus	freq_bus
Social Interaction	see_neigh					.098**
	chat_neigh		0 078*		0.105**	
	borrow_neigh		-0 073*	-0 142**	0 189**	
	name_neigh		0.105**		0.095**	
	nocon_neigh			0.085*		
	avoid_neigh				0 154**	-0 103**
Social Networks	socialise			-0.114**	0 146**	
	see_friends					
	num_friends				0 104**	-0 105**
Sense of community	proud	0.129**	0.178**	-0.136**	0 269**	-0 249**
	look_out				0 156**	-0 095**
	friendly				0.167**	-0.190**
	bckground	0 088*		-0.075*	0.098**	-0 083*
	SSI_get_on		-0 206*		0 241*	
	SSI_socomm					
Participation in organized activities	sports_grp		-0 068*			
	adult_ed					
	comm_grp				0 084*	
	support_grp					
	religious_grp		0 08*			
	other_grp		0 095**	-0 077*	0 142**	
Trust and reciprocity	look_out				0.156**	-0 095**
	SSI_trust				0.318**	-0.330**
	favour		0 123**		0 180**	-0 133**
Safety	safe		0 097**		0.169**	-0 298**
	crime		0 119**		0.099**	-0 252**
Sense of place attachment	proud	0 129**	0.178**	-0.136**	0.269**	-0 249**
	belong		0.130**	-0 088*	0.189**	-0.176**
	SSI_attach					-0 257*

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.4 Relationships between connectedness and permeability and dimensions of social cohesion

Spearman's rho correlation coefficient		Connectedness variables		
Social Cohesion variables		junc_conn	junc_str	block_siz
Social Interaction	see_neigh		0.071*	-0.090*
	chat_neigh	-0 089*		0.108**
	borrow_neigh	-0.127**		
	name_neigh	-0.133**		0.104**
	nocon_neigh			
	avoid_neigh			0.093*
Social Networks	socialise			
	see_friends			
	num_friends			
Sense of community	proud	-0.084*		
	look_out	-0 083*		0 097*
	friendly		0.078*	
	bckground			
	SSI_get_on			
	SSI_socomm		0.307**	
Participation in organized activities	sports_grp	-0 078*		
	adult_ed			
	comm_grp			
	support_grp			
	religious_grp	-0 067*		
	other_grp	-0.115**		
Trust and reciprocity	look_out	-0 083*		0 097*
	SSI_trust			
	favour	-0 100**		0.085*
Safety	safe		0 095*	0.104**
	crime	0 072*		0 082**
Sense of place attachment	proud	-0.084*		
	belong			
	SSI_attach			

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.5 Relationships between legibility and dimensions of social cohesion

Spearman's rho correlation coefficient		Legibility variables		
Social Cohesion variables		node	node_asse	landmark
Social Interaction	see_neigh			
	chat_neigh	-0.092**	-0.235**	-0.089*
	borrow_neigh			
	name_neigh	-0.118**		-0.097**
	nocon_neigh	-0.108**		
	avoid_neigh	-0 089*		
Social Networks	socialise			
	see_friends		0 206*	
	num_friends			
Sense of community	proud	-0 083*		
	look_out	-0.132**		
	friendly			
	bckground			
	SSI_get_on			
	SSI_socomm			
Participation in organized activities	sports_grp			
	adult_ed			
	comm_grp			
	support_grp			
	religious_grp			-0.081*
	other_grp			
Trust and reciprocity	look_out	-0.132**		-0.084*
	SSI_trust			
	favour	-0.117**		-0.072*
Safety	safe			
	crime			
Sense of place attachment	proud	-0 083*		
	belong	-0 080*		
	SSI_attach			

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.6 Relationships between attractiveness and dimensions of social cohesion

Spearman's rho correlation coefficient		Attractiveness variables			
Social Cohesion variables		prop_os	trees	tree_ha	appear_new
Social Interaction	see_neigh			0.080*	0.095*
	chat_neigh	-0.103**	0 119**		0.111**
	borrow_neigh			-0 232**	0.085*
	name_neigh	-0 089*	0 098**		0 089*
	nocon_neigh		0.103**	0.137*	
	avoid_neigh	-0 081*		-0.150**	0.102**
Social Networks	socialise			-0 145**	
	see_friends				
	num_friends				0 113**
Sense of community	proud		0.086*	-0.090**	0.524**
	look_out	-0 073*	0 075*	-0 075*	0.244**
	friendly			-0.140**	0.391**
	bckground				0 245**
	SSI_get_on			-0.316**	
	SSI_socomm			-0.248*	
Participation in organized activities	sports_grp				
	adult_ed				
	comm_grp				0.081*
	support_grp				
	religious_grp		0.102**		0.081*
	other_grp		0 083*		
Trust and reciprocity	look_out	-0.073*	0.075*	-0 075*	0.244**
	SSI_trust			-0.286**	0.250*
	favour	-0 093**	0.098**		0 227**
Safety	safe		0.082*	-0.190**	0 246**
	crime			-0 085*	0 258**
Sense of place attachment	proud		0.086*	-0.090**	0.524**
	belong		0.072*	-0 069*	0 379**
	SSI_attach				0.359**

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.7 Relationships between inclusiveness and dimensions of social cohesion

Spearman's rho correlation coefficient

Social Cohesion variables		Inclusiveness variables: pvmt_wid	cross_kerbs	step_ramps	1ary_seat	spr_1seat	2ary_seat	spr_2seat	bstop_shelt	toilet
Social Interaction	see_neigh			0 358**	0125**					
	chat_neigh					0 074*	-0.125**	0 075*		-0.093**
	borrow_neigh	-0 079*	0 087*		- 118**	0.225**		0.169**		
	name_neigh	-0 080*					-0 106**			-0 088*
	nocon_neigh			0 223*	0.078*				0.191*	
	avoid_neigh				-0 078*	0 143**		0.114**		
Social Networks	socialise				-0 092**	0.114**				
	see_friends				0 068*					
	num_friends									
Sense of community	proud	-0 110**	-0 100**				-0 090**	-0 110**		
	look_out					0 082*	-0.139**			
	friendly	-0 100**					-0.083*			
	bckground	-0 071*		0 265**						
	SSI_get_on					0.281**				
	SSI_socomm	-0 203*								
Participation in organized activities	sports_grp				-0 071*	0 106**		0 086*		
	adult_ed		-0 080*							
	comm_grp	-0 090**			0 070*					
	support_grp									
	religious_grp		-0.085*							
	other_grp						-0 079*			
Trust and reciprocity	look_out					0 082*	-0.139**			
	SSI_trust									
	favour						-0 098**			
Safety	safe	-0 099**					-0 078*		-0 200*	
	crime								-0 271**	
Sense of place attachment	proud	-0 110**	-0.100**				-0.090**	-0.110**		
	belong	-0.116**	-0.079*				-0 076*			
	SSI_attach									

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.8 Relationships between maintenance and dimensions of social cohesion

Spearman's rho correlation coefficient

Social Cohesion variables		Maintenance variables: pvmt_state	litter	homes_gdns
Social Interaction	see_neigh			
	chat_neigh		0.118**	0.178**
	borrow_neigh	0.110**	0.111**	0.113**
	name_neigh		0.105**	0.135**
	nocon_neigh			0.114**
	avoid_neigh		0.097**	0.176**
Social Networks	socialise		0.106**	0.104**
	see_friends			
	num_friends			0.110**
Sense of community	proud		0.153**	0.460**
	look_out		0.135**	0.258**
	friendly		0.127**	0.404**
	bckground		0 098**	0.283**
	SSI_get_on		0.318**	
	SSI_socomm			
Participation in organized activities	sports_grp			0.088*
	adult_ed		0.076*	0.107**
	comm_grp			
	support_grp			
	religious_grp			
	other_grp		0.085*	0.111**
Trust and reciprocity	look_out		0.135**	0.258**
	SSI_trust		0.261**	0.268**
	favour		0.159**	0.211**
Safety	safe		0.158**	0.270**
	crime		0.099**	0.243**
Sense of place attachment	proud		0.153**	0.460**
	belong		0.115**	0.352**
	SSI_attach			0.253*

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.9 Relationships between various features of quality of the built environment and dimensions of social cohesion

Spearman's rho correlation coefficient		Natural surveillance variable	Character	Perceived quality of the built environment variables	
Social Cohesion variables		frontage	char_pres	neigh_place	rate_score
Social Interaction	see_neigh			0.122**	0.314**
	chat_neigh		0.283**	.208**	0.269**
	borrow_neigh	0.166**		.211**	0.215*
	name_neigh			.217**	0.282**
	nocon_neigh				
	avoid_neigh			.194**	
Social Networks	socialise	0.109**	0 252*	.190**	
	see_friends				
	num_friends	0 078*	0.240*	.172**	0 230*
Sense of community	proud		0.227*	0 589**	0 475**
	look_out		0.254*	0 341**	0.413**
	friendly	0.107**	0.324**	0 485**	0 537**
	bckground	0 106**	0.269**	0.333**	0 432**
	SSI_get_on			0 311**	0.212*
	SSI_socomm	0 218*	0.386**	0.254*	0 420**
Participation in organized activities	sports_grp				
	adult_ed				
	comm_grp			0 085*	
	support_grp				
	religious_grp		-	0.072*	
	other_grp			0.114**	
Trust and reciprocity	look_out		0 254*	0 341**	0.413**
	SSI_trust			0.331**	0.384**
	favour			0 350**	0 414**
Safety	safe	0.121**		0.388**	
	crime		-0 357**	0.282**	
Sense of place attachment	proud		0.227*	0.589**	0.475**
	belong		0.275**	0.475**	0.578**
	SSI_attach		0 386**	0 467**	0 451**

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.10 Relationships between participation in organized activities in the neighbourhood and participation in organized activities outside the neighbourhood but within the city

		Participation in organized activities outside the neighbourhood but within the city					
Spearman's rho correlation coefficient		sports_grp	adult_ed	comm_grp	support_grp	religious_grp	other_grp
Participation in organized activities in the neighbourhood	sports_grp			0.082*			
	adult_ed						0.082*
	comm_grp		0.069*		0.130**		0.129**
	support_grp			0.067*	0.105**		0.093**
	religious_grp					0.068*	
	other_grp						0.086*

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed)
- = negative relationship

Table E.11 Relationships between participation in organized activities in the neighbourhood and participation in organized activities outside the city

		Participation in organized activities outside the city					
Spearman's rho correlation coefficient		sports_grp	adult_ed	comm_grp	support_grp	religious_grp	other_grp
Participation in organized activities in the neighbourhood	sports_grp						
	adult_ed						
	comm_grp		0.071*				
	support_grp		0.081*				
	religious_grp					0.074*	
	other_grp						

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed)

Table E.12 Relationships between plans to move house, household income and feelings of safety

Spearman's rho correlation coefficient	z-safety	plans_move	hhd_income
z-safety	---		0.192**
plans_move		---	0.165**
hhd_income	0.192**	0.165**	---

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Table E.13 Relationships between indicators measuring quality of the built environment and residents' perceptions of their neighbourhood as a place to live

Spearman's rho correlation coefficient

Quality of the built environment variables		**neigh_place**
Density	dens_gr	-0.223**
	dens_gr_hha	-0.288**
	rat_bl_os	-0.019
	dens_net	-0.113**
	dens_net_hha	-0.226**
	dens_hhold	0.155**
	str_intens	-0.182**
Mixed land use	no_servs	-0.091**
	servs_ha	-0.118**
	serbuff	-0.221**
	serbuff_ha	-0.221**
	rat_resl	-0.003
	spr_ser	-0.070*
Accessibility	open_sp	0.160**
	open_buff	0.259**
	no_bus	-0.199**
	sprd_bus	0.406**
	freq_bus	-0.433**
Connectedness	junc_conn	-0.100**
	junc_str	-0.039
	block_siz	0.106**
Legibility	node	-0.104**
	node_asse	-0.121
	landmark	-0.018
Attractiveness	prop_os	0.019
	trees	0.136**
	tree_ha	-0.214**
	appear_new	0.645**
Inclusiveness	pvmt_wid	-0.124**
	cross_kerbs	-0.094**
	step_ramps	0.190
	1ary_seat	0.054
	spr_1seat	-0.002
	2ary_seat	-0.216**
	spr_2seat	-0.116**
	bstop_shelt	-0.083
	toilet	-0.041
Maintenance	pvmt_state	-0.038
	litter	0.292**
	homes_gdns	0.487**
Natural surveillance	frontage	0.048
Character	char_pres	0.115
Quality_score	rate_score	0.538**

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship

Appendix F

Regression Analyses

Table F.1 Standard Multiple Regression Analysis: Z-score of social interaction variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SI1. QoBE variables only	(Constant)	-5.217		0.000		
	neigh_place	0.045	0.223	0.000	0.834	1.200
	Z_access	0.733	0.211	0.000	0.953	1.049
	frontage	0.018	0.095	0.017	0.965	1.036
	Z_maint	0.197	0.090	0.033	0.849	1.178
SI2. QoBE variables and intervening variables	(Constant)	-3.962		0.000		
	neigh_place	0.032	0.157	0.000	0.805	1.242
	Z_access	0.506	0.145	0.001	0.813	1.230
	frontage	0.014	0.077	0.050	0.953	1.049
	Z_maint	0.197	0.090	0.031	0.838	1.193
	tenure_private renter	-1.679	-0.154	0.001	0.741	1.350
	hhd_income <10K	-1.736	-0.188	0.000	0.927	1.078
	plans_move	-1.340	-0.163	0.000	0.778	1.285
	use_facs	0.031	0.128	0.001	0.965	1.037
	length_res	0.024	0.082	0.049	0.846	1.181

SI1. R = .329 R Square = .108 Adjusted R Square = .102 This indicates that 10.2% of variance in all social interaction is explained by the variables in this model
SI2. R = .471 R Square = .222 Adjusted R Square = .209 This indicates that 20.9% of variance in all social interaction is explained by the variables in this model

Table F.2 Standard Multiple Regression Analysis: Z-score of positive social interaction variables (Dependent Variable) and quality of the built environment variables (Independent Variables)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SIp1. QoBE variables only	(Constant)	-3.785		0.000		
	neigh_place	0.033	0.209	0.000	0.834	1.200
	Z_access	0.414	0.155	0.000	0.953	1.049
	frontage	0.013	0.091	0.021	0.965	1.036
	Z_maint	0.158	0.094	0.025	0.849	1.178
SIp2. QoBE variables and intervening variables	(Constant)	-2.719		0.000		
	neigh_place	0.023	0.147	0.001	0.806	1.241
	Z_access	0.314	0.117	0.009	0.755	1.325
	frontage	0.009	0.059	0.148	0.911	1.097
	Z_maint	0.170	0.101	0.017	0.836	1.196
	tenure_private renter	-1.477	-0.176	0.000	0.759	1.317
	plans_move	-1.083	-0.172	0.000	0.822	1.217
	hhd_income	-1.122	-0.159	0.000	0.928	1.077
	use_facs	0.025	0.131	0.001	0.967	1.035
	accomm_type_terr	0.597	0.095	0.025	0.835	1.197

SIp1. R = .296 R Square = .088 Adjusted R Square = .082 This indicates that 8.2% of variance in positive social interaction is explained by the variables in this model
SIp2. R = .444 R Square = .197 Adjusted R Square = .184 This indicates that 18.4% of variance in positive social interaction is explained by the variables in this model

Table F.3 Standard Multiple Regression Analysis: Z-score of negative social interaction variables (Dependent Variable) and quality of the built environment variables (Independent Variables)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SIn1. QoBE variables only	(Constant)	-0.973		0.001		
	Z_dens	-0.059	-0.143	0.001	0.874	1.144
	safe	0.006	0.099	0.021	0.830	1.205
	Z_legib	-0.084	-0.093	0.025	0.896	1.116
	neigh_place	0.007	0.088	0.042	0.806	1.241
SIn2. QoBE variables and intervening variables	(Constant)	-0.973		0.001		
	Z_dens	-0.059	-0.143	0.001	0.874	1.144
	safe	0.006	0.099	0.021	0.830	1.205
	Z_legib	-0.084	-0.093	0.025	0.896	1.116
	neigh_place	0.007	0.088	0.042	0.806	1.241

SIn1. R = .261 R Square = .068 Adjusted R Square = .062 This indicates that 6.2% of variance in negative social interaction is explained by the variables in this model
SIn2. R = .261 R Square = .068 Adjusted R Square = .062 This indicates that 6.2% of variance in negative social interaction is explained by the variables in this model

Table F.4 Standard Multiple Regression Analysis: Z-score of social network variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SN1. QoBE variables only	(Constant)	-1.575		0.000		
	neigh_place	0.019	0.164	0.000	1.000	1.000
SN2. QoBE variables and intervening variables	(Constant)	-2.536		0.000		
	neigh_place	0.022	0.162	0.001	0.966	1.036
	hhd_size	0.418	0.206	0.000	0.996	1.004
	plans_move	-0.469	-0.101	0.030	0.969	1.032

SN1. R = .164 R Square = .027 Adjusted R Square = .025 This indicates that 2.5% of variance in social networks is explained by the variables in model SN1

SN2. R = .300 R Square = .090 Adjusted R Square = .083 This indicates that 8.3% of variance in social networks is explained by the variables in model SN2

Table F.5 Standard Multiple Regression Analysis: Z-score of sense of community variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SOC1. QoBE variables only	(Constant)	-8.609		0.000		
	neigh_place	0.068	0.404	0.000	0.514	1.946
	Z_maint	0.205	0.113	0.002	0.792	1.262
	frontage	0.015	0.098	0.003	0.970	1.030
	appear	0.015	0.113	0.010	0.551	1.814
SOC2. QoBE variables and intervening variables	(Constant)	-8.244		0.000		
	neigh_place	0.053	0.319	0.000	0.543	1.842
	appear	0.020	0.157	0.001	0.572	1.750
	Z_maint	0.125	0.073	0.062	0.778	1.285
	use_facs	0.032	0.161	0.000	0.976	1.025
	plans_move	-0.769	-0.129	0.001	0.861	1.161
	length_res	0.022	0.095	0.010	0.868	1.152
	gender	0.519	0.087	0.013	0.952	1.051

SOC1. R = .598 R Square = .358 Adjusted R Square = .352 This indicates that 35.2% of variance in sense of community is explained by the variables in this model

SOC2. R = .615 R Square = .379 Adjusted R Square = .369 This indicates that 36.9% of variance in sense of community is explained by the variables in this model

Table F.6.a Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in sports groups in the neighbourhood (Dependent Variable)

-2 Log Likelihood	Nagelkerke R Square	Hosmer and Lemeshow Test Chi square	df	Sig.	Improvement in prediction when regression is applied
577.553[a]	0.127	10.026	8	0.263	0%

[a]Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

This table indicates that, while the model adequately fits the data (shown by the non-significant chi square produced [Tabachnick and Fidell, 2001, p. 39]), the independent variables included in the model contribute poorly to the prediction (Nagelkerke R Square x 100 = 12.7%) of participation in sports groups. There is no improvement in the prediction when the independent variables are included in the model.

Table F.6.b Forward Stepwise Logistic Regression Analysis: Participation in sports groups in the neighbourhood (Dependent Variable)

Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
Z_inclu	0.079	0.025	1.082	1.010	1.159
tenure_own	0.773	0.001	2.167	1.376	3.412
use_facs	0.028	0.000	1.028	1.015	1.042
length_res	-0.042	0.000	0.959	0.939	0.979
sex	0.592	0.010	1.807	1.155	2.829
Constant	-3.349	0.000	0.035		

Table F.7.a Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in adult education in the neighbourhood (Dependent Variable)

-2 Log Likelihood	Nagelkerke R Square	Chi square	Hosmer and Lemeshow Test df	Sig.	Improvement in prediction when regression is applied
280.813[a]	0.087	6.907	8	0.547	0%

[a]Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.
This indicates that, while the model adequately fits the data (shown by the non-significant chi square produced [Tabachnick and Fidell, 2001, p. 39]), the independent variables included in the model contribute very poorly to the prediction (Nagelkerke R Square x 100 = 8.7%) of participation in community groups. There is no improvement in the prediction when the independent variables are included in the model.

Table F.7.b Forward Stepwise Logistic Regression Analysis: Participation in adult education in the neighbourhood (Dependent Variable)

Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
tenure_own	-0.688	0.045	0.503	0.257	0.986
use_facs	0.026	0.006	1.027	1.008	1.046
Constant	-3.243	0.000	0.039		

Table F.8.a Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in community groups in the neighbourhood (Dependent Variable)

-2 Log Likelihood	Nagelkerke R Square	Chi square	Hosmer and Lemeshow Test df	Sig.	Improvement in prediction when regression is applied
485.563[a]	0.027	5.823	8	0.667	0%

[a]Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
This table indicates that, while the model adequately fits the data (shown by the non-significant chi square produced [Tabachnick and Fidell, 2001, p. 39]), the independent variables included in the model contribute very poorly to the prediction (Nagelkerke R Square x 100 = 2.7%) of participation in sports groups. There is no improvement in the prediction when the independent variables are included in the model.

Table F.8.b Forward Stepwise Logistic Regression Analysis: Participation in community groups in the neighbourhood (Dependent Variable) and quality of the built environment variables and intervening variables (Independent Variables)

Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
Z_muse	-0.086	0.020	0.917	0.853	0.987
use_facs	0.015	0.035	1.015	1.001	1.030
Constant	-2.404	0.000	0.090		

Table F.9.a Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in support groups in the neighbourhood (Dependent Variable)

-2 Log Likelihood	Nagelkerke R Square	Chi square	Hosmer and Lemeshow Test df	Sig.	Improvement in prediction when regression is applied
280.813[a]	0.028	5.301	8	0.725	0%

[a]Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.
This indicates that, while the model adequately fits the data (shown by the non-significant chi square produced [Tabachnick and Fidell, 2001, p. 39]), the independent variables included in the model contribute very poorly to the prediction (Nagelkerke R Square x 100 = 2.8%) of participation in community groups. There is no improvement in the prediction when the independent variables are included in the model.

Table F.9.b Forward Stepwise Logistic Regression Analysis: Participation in support groups in the neighbourhood (Dependent Variable)

Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
use_facs	0.027	0.017	1.027	1.005	1.050
Constant	-4.033	0.000	0.018		

Table F.10.a Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in religious groups in the neighbourhood (Dependent Variable)

-2 Log Likelihood	Nagelkerke R Square	Hosmer and Lemeshow Test Chi square	df	Sig.	Improvement in prediction when regression is applied
468.333[a]	0.021	3.813	4	0.432	0%

[a]Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
This indicates that, while the model adequately fits the data (shown by the non-significant chi square produced [Tabachnick and Fidell, 2001, p. 39]), the independent variables included in the model contribute very poorly to the prediction (Nagelkerke R Square x 100 = 2.1%) of participation in community groups. There is no improvement in the prediction when the independent variables are included in the model.

Table F.10.b Forward Stepwise Logistic Regression Analysis: Participation in religious groups in the neighbourhood (Dependent Variable)

Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
Z_muse	-0.100	0.010	0.905	0.839	0.976
Constant	-2.025	0.000	0.132		

Table F.11.a Model Summary - Forward Stepwise Logistic Regression Analysis: Participation in other groups in the neighbourhood (Dependent Variable)

-2 Log Likelihood	Nagelkerke R Square	Hosmer and Lemeshow Test Chi square	df	Sig.	Improvement in prediction when regression is applied
266.029[a]	0.137	16.094	8	0.410	0%

[a]Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.
This indicates that the model does not adequately fit the data (shown by the significant chi square produced [Tabachnick and Fidell, 2001, p. 39]), the independent variables included in the model contribute very poorly to the prediction (Nagelkerke R Square x 100 = 13.7%) of participation in community groups. There is no improvement in the prediction when the independent variables are included in the model.

Table F.11.b Forward Stepwise Logistic Regression Analysis: Participation in other groups in the neighbourhood (Dependent Variable)

Independent variable	B	Sig.	Exp(B)	95.0% C.I.for EXP(B) Lower	Upper
Z_muse	-0.224	0.001	0.799	0.704	0.907
use_facs	0.035	0.000	1.035	1.017	1.054
sex	0.987	0.017	2.684	1.197	6.016
Constant	-5.757	0.000	0.003		

Table F.12 Standard Multiple Regression Analysis: Z-score of trust and reciprocity variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
TRU1. QoBE variables only	(Constant)	-3.257		0.000		
	neigh_place	0.029	0.306	0.000	0.827	1.210
	Z_legib	-0.103	-0.099	0.011	0.896	1.116
	frontage	0.011	0.128	0.001	0.953	1.050
	Z_maint	0.088	0.087	0.030	0.841	1.189
	Z_dens	-0.038	-0.081	0.044	0.837	1.195
TRU2. QoBE variables and intervening variables	(Constant)	-2.339		0.000		
	neigh_place	0.024	0.239	0.000	0.786	1.272
	Z_legib	-0.152	-0.153	0.000	0.844	1.185
	Z_maint	0.109	0.109	0.014	0.947	1.056
	Z_inclu	0.054	0.090	0.034	0.812	1.231
	plans_move	-0.698	-0.203	0.000	0.844	1.185
	hhd_comp_single	-0.387	-0.101	0.016	0.938	1.066
	use_facs	0.015	0.129	0.003	0.861	1.161
	tenure_own	0.411	0.117	0.011	0.948	1.055

TRU1. R = .427 R Square = .182 Adjusted R Square = .175 This indicates that 17.5% of variance in trust and reciprocity is explained by the variables in this model

TRU2. R = .517 R Square = .267 Adjusted R Square = .254 This indicates that 25.4% of variance in trust and reciprocity is explained by the variables in this model

Table F.13 Standard Multiple Regression Analysis: Z-score of safety variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SAF1. QoBE variables only	(Constant)	-3.174		0.000		
	neigh_place	0.032	0.367	0.000	0.588	1.700
	Z_muse	0.071	0.139	0.000	0.937	1.067
	appear	0.009	0.135	0.007	0.562	1.778
SAF2. QoBE variables and intervening variables	(Constant)	-2.541		0.000		
	neigh_place	0.031	0.346	0.000	0.629	1.590
	Z_muse	0.048	0.104	0.014	0.862	1.161
	appear	0.010	0.152	0.003	0.606	1.650
	plans_move	0.336	0.104	0.012	0.893	1.120
	gender	-0.376	-0.118	0.004	0.932	1.073
	emp_status_retired	-0.408	-0.106	0.013	0.846	1.181

SAF1. R = .461 R Square = .213 Adjusted R Square = .209 This indicates that 20.9% of variance in feelings of safety is explained by the variables in this model

SAF2. R = .457 R Square = .209 Adjusted R Square = .200 This indicates that 20% of variance in feelings of safety is explained by the variables in this model

Table F.14 Standard Multiple Regression Analysis: Z-score of sense of place attachment variables (Dependent Variable)

Independent variable groups included in each regression model	Independent variable	Unstandardized Coefficients - B	Standardized Coefficients - Beta	Sig.	Collinearity Statistics Tolerance	VIF
SOP1. QoBE variables only	(Constant)	-4.845		0.000		
	neigh_place	0.042	0.437	0.000	0.567	1.763
	appear	0.013	0.173	0.000	0.552	1.813
	Z_maint	0.086	0.084	0.014	0.797	1.254
	frontage	0.006	0.063	0.040	0.990	1.010
SOP2. QoBE variables and intervening variables	(Constant)	-4.572		0.000		
	neigh_place	0.040	0.402	0.000	0.591	1.692
	appear	0.014	0.176	0.000	0.571	1.752
	Z_maint	0.089	0.089	0.011	0.792	1.262
	plans_move	-0.616	-0.167	0.000	0.879	1.137
	length_res	0.012	0.087	0.008	0.891	1.122
	gender	0.237	0.065	0.038	0.983	1.018

SOP1. R = .612 R Square = .375 Adjusted R Square = .371 This indicates that 37.1% of variance in feelings of place attachment is explained by the variables in this model

SOP2. R = .640 R Square = .410 Adjusted R Square = .404 This indicates that 40.4% of variance in feelings of place attachment is explained by the variables in this model

Appendix G

Findings from Semi-Structured Interviews

Table G.1 Does the neighbourhood have its own character?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Yes	69	67.6	68.6
No	27	26.5	95.1
Don't know	5	4.9	100
Total	102	100	

Table G.2 How would you rate the quality of your neighbourhood out of 10?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
2	4	3.9	5.9
4	1	1	6.9
5	4	3.9	10.8
6	7	6.9	17.6
7	26	25.5	43.1
8	31	30.4	73.5
9	20	19.6	93.1
10	7	6.9	100
Total	102	100	

Table G.3 How attached do you feel to your neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Very attached	41	40.2	41.2
Fairly attached	40	39.2	80.4
Not very attached	11	10.8	91.2
Not at all attached	7	6.9	98
Don't know	2	2	100
Total	102	100	

Table G.4 Thinking about your neighbourhood, how strong a sense of community is there where you live'

	Frequency	Valid Percent	Cumulative Percent
Very strong	15	14.7	14.7
Fairly strong	52	51	65.7
Not very strong	16	15.7	81.4
No sense of community	12	11.8	93.1
Don't know	7	6.9	100
Total	102	100	

Table G.5 How well would you say that people in your neighbourhood get on together?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Very well	36	35.3	36.3
Quite well	52	51	87.3
Not very well	4	3.9	91.2
Not at all well	1	1	92.2
Don't know	8	7.8	100
Total	102	100	

Table G.6 Would you say that you trust.... people in your neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Most	55	53.9	53.9
Some	23	22.5	76.5
A few	17	16.7	93.1
None	2	2	95.1
All	4	3.9	99
Don't know	1	1	100
Total	102	100	

Table G.7 Would rubbish/ litter lying around have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Positive effect	8	7.8	7.8
No effect	13	12.7	20.6
Negative effect	81	79.4	100
Total	102	100	

Table G.8 Would vandalism/ graffiti have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	7	6.9	7.8
No effect	8	7.8	15.7
Negative effect	86	84.3	100
Total	102	100	

Table G.9 Would other people's homes/gardens in poor condition have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	5	4.9	5.9
No effect	22	21.6	27.5
Negative effect	72	70.6	98
Don't know	2	2	100
Total	102	100	

Table G.10 Would pavements/ roads in poor condition have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	5	4.9	5.9
No effect	28	27.5	33.3
Negative effect	68	66.7	100
Total	102	100	

Table G.11 Would an attractive neighbourhood have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	84	82.4	83.3
No effect	15	14.7	98
Negative effect	2	2	100
Total	102	100	

Table G.12 Would having a bus stop nearby have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	56	54.9	56.9
No effect	43	42.2	99
Don't know	1	1	100
Total	102	100	

Table G.13 Would well-maintained open spaces have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	85	83.3	85.3
No effect	13	12.7	98
Don't know	2	2	100
Total	102	100	

Table G.14 Would a neighbourhood that is easy to walk around have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	78	76.5	78.4
No effect	19	18.6	97.1
Negative effect	3	2.9	100
Total	102	100	

Table G.15 Would lots of people out and about have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Not applicable	3	2.9	4.9
Positive effect	66	64.7	69.6
No effect	26	25.5	95.1
Negative effect	4	3.9	99
Don't know	1	1	100
Total	102	100	

Table G.16 Would houses overlooking your own have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Not applicable	1	1	3.9
Positive effect	32	31.4	35.3
No effect	45	44.1	79.4
Negative effect	19	18.6	98
Don't know	2	2	100
Total	102	100	

Table G.17 Would well-lit streets have an effect on how safe you feel in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	86	84.3	87.3
No effect	10	9.8	97.1
Negative effect	3	2.9	100
Total	102	100	

Table G.18 Would litter, vandalism and graffiti have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	30	29.4	31.4
No effect	39	38.2	69.6
Negative effect	22	21.6	91.2
Don't know	9	8.8	100
Total	102	100	

Table G.19 Would the environment in good condition have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	47	46.1	49
No effect	40	39.2	88.2
Negative effect	8	7.8	96.1
Don't know	4	3.9	100
Total	102	100	

Table G.20 Would high volume of road traffic have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	14	13.7	14.7
No effect	23	22.5	37.3
Negative effect	59	57.8	95.1
Don't know	5	4.9	100
Total	102	100	

Table G.21 Would good provision of services/facilities have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	82	80.4	81.4
No effect	15	14.7	96.1
Negative effect	1	1	97.1
Don't know	3	2.9	100
Total	102	100	

Table G.22 Would good provision of public open spaces have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Positive effect	80	78.4	78.4
No effect	16	15.7	94.1
Negative effect	2	2	96.1
Don't know	4	3.9	100
Total	102		

Table G.23 Would a neighbourhood that is easy to walk around have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	79	77.5	78.4
No effect	17	16.7	95.1
Negative effect	2	2	97.1
Don't know	3	2.9	100
Total	102	100	

Table G.24 Would an attractive neighbourhood have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	56	54.9	55.9
No effect	35	34.3	90.2
Negative effect	4	3.9	94.1
Don't know	6	5.9	100
Total	102	100	

Table G.25 Would a bus stop nearby have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	64	62.7	64.7
No effect	31	30.4	95.1
Negative effect	1	1	96.1
Don't know	4	3.9	100
Total	102	100	

Table G.26 Would places to sit have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	71	69.6	71.6
No effect	21	20.6	92.2
Negative effect	6	5.9	98
Don't know	2	2	100
Total	102	100	

Table G.27 Would feeling safe in a neighbourhood have an effect on the opportunity you have to talk to people in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	80	78.4	80.4
No effect	13	12.7	93.1
Negative effect	4	3.9	97.1
Don't know	3	2.9	100
Total	102	100	

Table G.28 Would good provision of services/facilities have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	94	92.2	94.1
No effect	6	5.9	100
Total	102	100	

Table G.29 Would good provision of public open spaces have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	90	88.2	90.2
No effect	10	9.8	100
Total	102	100	

Table G.30 Would the environment in good condition have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	85	83.3	86.3
No effect	11	10.8	97.1
Negative effect	3	2.9	100
Total	102	100	

Table G.31 Would litter, vandalism and graffiti have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	12	11.8	14.7
No effect	11	10.8	25.5
Negative effect	74	72.5	98
Don't know	2	2	100
Total	102	100	

Table G.32 Would an attractive neighbourhood have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	85	83.3	85.3
No effect	14	13.7	99
Negative effect	1	1	100
Total	102	100	

Table G.33 Would lots of people out and about have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	80	78.4	81.4
No effect	14	13.7	95.1
Negative effect	4	3.9	99
Don't know	1	1	100
Total	102	100	

Table G.34 Would a neighbourhood that is easy to walk around have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	88	86.3	88.2
No effect	9	8.8	97.1
Negative effect	2	2	99
Don't know	1	1	100
Total	102	100	

Table G.35 Would feeling safe in a neighbourhood have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	91	89.2	92.2
No effect	4	3.9	96.1
Negative effect	2	2	98
Don't know	2	2	100
Total	102	100	

Table G.36 Would the character of a neighbourhood have an effect on the sense of community in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Not applicable	2	2	4.9
Positive effect	80	78.4	83.3
No effect	14	13.7	97.1
Negative effect	1	1	98
Don't know	2	2	100
Total	102	100	

Table G.37 Would good provision of services/facilities encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Encourage	80	78.4	78.4
Neither encourage nor discourage	21	20.6	99
Don't know	1	1	100
Total	102	100	

Table G.38 Would good provision of public open spaces encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Encourage	68	66.7	69.6
Neither encourage nor discourage	31	30.4	100
Total	102	100	

Table G.39 Would the environment in good condition encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Encourage	64	62.7	64.7
Neither encourage nor discourage	34	33.3	98
Discourage	1	1	99
Don't know	1	1	100
Total	102	100	

Table G.40 Would litter, vandalism and graffiti encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Encourage	4	3.9	6.9
Neither encourage nor discourage	42	41.2	48
Discourage	53	52	100
Total	102	100	

Table G.41 Would an attractive neighbourhood encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	4	3.9	3.9
Encourage	48	47.1	51
Neither encourage nor discourage	47	46.1	97.1
Discourage	3	2.9	100
Total	102	100	

Table G.42 Would a frequent transport service encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Encourage	74	72.5	74.5
Neither encourage nor discourage	25	24.5	99
Don't know	1	1	100
Total	102	100	

Table G.43 Would a neighbourhood which is easy to walk around encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Encourage	75	73.5	76.5
Neither encourage nor discourage	23	22.5	99
Discourage	1	1	100
Total	102	100	

Table G.44 Would a neighbourhood in which you feel safe encourage you to participate in activities in a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Encourage	85	83.3	86.3
Neither encourage nor discourage	11	10.8	97.1
Discourage	3	2.9	100
Total	102	100	

Table G.45 Would good provision of services/facilities have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	85	83.3	84.3
No effect	16	15.7	100
Total	102	100	

Table G.46 Would good provision of public open spaces have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	3	2.9	2.9
Positive effect	86	84.3	87.3
No effect	13	12.7	100
Total	102	100	

Table G.47 Would the environment in good condition have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	86	84.3	85.3
No effect	13	12.7	98
Negative effect	2	2	100
Total	102	100	

Table G.48 Would litter, vandalism and graffiti have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	5	4.9	5.9
No effect	8	7.8	13.7
Negative effect	88	86.3	100
Total	102	100	

Table G.49 Would well-maintained public spaces have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	89	87.3	89.2
No effect	11	10.8	100
Total	102	100	

Table G.50 Would an attractive neighbourhood have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	2	2	2
Positive effect	94	92.2	94.1
No effect	6	5.9	100
Total	102	100	

Table G.51 Would feeling safe in a neighbourhood have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	94	92.2	93.1
No effect	4	3.9	97.1
Negative effect	3	2.9	100
Total	102	100	

Table G.52 Would a neighbourhood that is easy to walk around have an effect on how attached you feel to a neighbourhood?

	Frequency	Valid Percent	Cumulative Percent
Missing value	1	1	1
Positive effect	86	84.3	85.3
No effect	13	12.7	98
Negative effect	2	2	100
Total	102	100	

Appendix H

Supplementary Analyses

H.1 One-Way Between-Groups ANOVA with Post-Hoc tests: Social Interaction and Household Income

H.1a Test of Homogeneity of Variances

z-score_social interaction

Levene Statistic	df1	df2	Sig.
2.202	6	702	0.041

H.1b ANOVA

z-score_social interaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	298.66	6	49.777	3.346	0.003
Within Groups	10442.844	702	14.876		
Total	10741.504	708			

The significance value for Levene's test is less than 0.5 which means that the assumption of homogeneity of variance has been violated.

H.2 One-Way Between-Groups ANOVA with Post-Hoc tests: Social Interaction and Tenure

2a. Test of Homogeneity of Variances

z-score _social interaction

Levene Statistic	df1	df2	Sig.
2.852	2	701	0.058

H.2b ANOVA

z-score_social interaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	871.387	2	435.694	31.073	0.000
Within Groups	9829.115	701	14.022		
Total	10700.502	703			

H.2c Multiple Comparisons

Dependent Variable: z-score_social interaction

Tukey HSD					95% Confidence Interval	
(I) Tenure	(J) Tenure	Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Own	Social rent	1.11319(*)	0.34675	0.004	0.2988	1.9276
	Private rent	3.00911(*)	0.38729	0	2.0995	3.9187
Social rent	Own	-1.11319(*)	0.34675	0.004	-1.9276	-0.2988
	Private rent	1.89592(*)	0.45159	0	0.8353	2.9566
Private rent	Own	-3.00911(*)	0.38729	0	-3.9187	-2.0995
	Social rent	-1.89592(*)	0.45159	0	-2.9566	-0.8353

* The mean difference is significant at the .05 level.

H.2d Effect size = $\frac{\text{Sum of squares between-groups}}{\text{Total sum of squares}}$ = 0.0814 = 0.08 = a medium effect[1]

[1] According to Cohen, .01 is classified as a small effect, .06 as a medium effect and 0.14 as a large effect (1988; Pallant, 2001).

H.3 Independent-Samples T-Test: Social interaction and plans to move house in next few yrs

H.3a Group Statistics

	Q13 Move plans	N	Mean	Std. Deviation	Std. Error Mean
z_social interaction	No	461	0.4921	2.93153	0.13653
	Yes	266	-1.0276	2.83871	0.17405

H.3b Independent Samples Test

		Levene's Test for Equality of F	Sig.	t-test for Equality of Means t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of Lower	Upper
z_social interaction	Equal variances assumed	0.872	0.351	6.811	725	0	1.51972	0.22313	1.08165	1.95779
	Equal variances not assumed	6.87		567.654	0		1.51972	0.22122	1.08522	1.95422

H.3c Effect size for independent-sample t-test

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} = 0.06 = \text{a moderate effect}$$

Expressed as a percentage (eta squared x 100), 6% of the variance in social interaction is explained by residents' plans to move house.

H.4 Independent-Samples T-Test: Social networks and residents' perceptions of their neighbourhood as a place to live

H.4a Group Statistics

	Neighbourhood is a good place to live	N	Mean	Std. Deviation	Std. Error Mean
z_social networks	No	94	-1.1827	2.97623	0.30697
	Yes	641	0.1186	2.96196	0.11699

H.4b Independent Samples Test

		Levene's Test for Equality of F	Sig.	t-test for Equality of Means t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval Lower	Upper
z_social networks	Equal variances assumed	0.937	0.333	-3.976	733	0	-1.30135	0.32734	-1.94398	-0.65872
	Equal variances not assumed			-3.961	121.604	0	-1.30135	0.32851	-1.95169	-0.651

H.4c Effect size for independent-sample t-test

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} = 0.01 = \text{a small effect}$$

Expressed as a percentage (eta squared x 100), 1% of the variance in social networks is explained by residents' feelings that their neighbourhood is a good place to live

H.5 One-Way Between-Groups ANOVA with Post-Hoc tests: Social networks and household size

H.5a Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.57	3	795	0.195

H.5b ANOVA

z score_social networks

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	78.546	3	26.182	5.336	0.001
Within Groups	3900.691	795	4.907		
Total	3979.236	798			

H.5c Multiple Comparisons

Dependent Variable: z score_social networks

Tukey HSD

- grps	comp -	Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-0.2312	0.17762	0.562	-0.6885	0.2261
	3	-.89023(*)	0.22632	0.001	-1.4729	-0.3076
	4	0.00306	0.52543	1	-1.3497	1.3558
2	1	0.2312	0.17762	0.562	-0.2261	0.6885
	3	-.65903(*)	0.21699	0.013	-1.2177	-0.1004
	4	0.23426	0.52148	0.97	-1.1083	1.5768
3	1	.89023(*)	0.22632	0.001	0.3076	1.4729
	2	.65903(*)	0.21699	0.013	0.1004	1.2177
	4	0.89329	0.54001	0.349	-0.497	2.2835
4	1	-0.00306	0.52543	1	-1.3558	1.3497
	2	-0.23426	0.52148	0.97	-1.5768	1.1083
	3	-0.89329	0.54001	0.349	-2.2835	0.497

* The mean difference is significant at the .05 level.

H.5d Effect size = Sum of squares between-groups = 0.0197 = 0.02 = a small effect
Total sum of squares

H.5.1 Univariate Analysis of Variance (2-Way ANOVA): Social Networks, Household size and Household composition

H.5.1a Levene's Test of Equality of Error Variances(a)

Dependent Variable: z _social networks

F	df1	df2	Sig.
1.983	20	769	0.006

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a Design: Intercept+comp_grp+Q42_hsehldsiz+comp_grp * Q42_hsehldsiz

Because of the significant result (value less than 0.5), a more stringent significance level (0.01) is set for evaluating the results from the two-way ANOVA. Main effects and interaction effects will only be considered if the significance value is less than 0.01 (after Pallant, 2001).

H.5.1b Tests of Between-Subjects Effects

Dependent Variable: z _social networks

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	203.583(b)	20	10.179	2.099	0.003	0.052
Intercept	11.484	1	11.484	2.368	0.124	0.003
comp_grp	18.236	3	6.079	1.253	0.289	0.005
Q42_hsehldsiz	92.389	8	11.549	2.381	0.015	0.024
comp_grp * Q42_hsehldsiz	20.803	9	2.311	0.477	0.891	0.006
Error	3729.565	769	4.85			
Total	3933.191	790				
Corrected Total	3933.148	789				

a Computed using alpha = .05
b R Squared = .052 (Adjusted R Squared = .027)

No main effects or interaction effects are considered as the significance values are not less than 0.01.

H.6 Independent-Samples T-Test: Social networks and plans to move house in next few years

H.6a Group Statistics

	Q13 Move plans	N	Mean	Std. Deviation	Std. Error Mean
z social networks	No	522	0.1786	2.27997	0.09979
	Yes	270	-0.2906	2.09559	0.12753

H.6b Independent Samples Test

		Levene's Test for F	Sig.	t-test for Equality of Means t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval Lower	Upper
z_social networks	Equal variances assumed	2.397	0.122	2.821	790	0.005	0.46919	0.16634	0.14267	0.7957
	Equal variances not assumed			2.897	585.85	0.004	0.46919	0.16194	0.15114	0.78723

H.6c Effect size for independent-sample t-test

Eta squared = $\frac{t^2}{t^2 + (N1 + N2 - 2)}$ = 0.009 = 0.001 = a small effect

Expressed as a percentage (eta squared x 100), 1% of the variance in social networks is explained by residents' plans to move house

H.7 One-Way Between-Groups ANOVA with Post-Hoc tests: Sense of community and residents' perceptions of the attractiveness of the neighbourhood

H.7a Test of Homogeneity of Variances

z score_sense of community

Levene Statistic	df1	df2	Sig.
2.03	4	779	0.088

H.7b ANOVA

z score_sense of community

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1588.189	4	397.047	47.655	0.000
Within Groups	6490.461	779	8.332		
Total	8078.65	783			

H.7c Multiple Comparisons

Dependent Variable: z score_sense of community

Tukey HSD					95% Confidence Interval	
(I) appear	(J) appear	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Very bad	Fairly bad	-1.52661	0.82682	0.348	-3.7873	0.7341
	Neither good nor bad	-2.92299(*)	0.78264	0.002	-5.0629	-0.7831
	Fairly good	-4.51013(*)	0.76078	0	-6.5902	-2.43
	Very good	-5.91016(*)	0.7726	0	-8.0226	-3.7977
Fairly bad	Very bad	1.52661	0.82682	0.348	-0.7341	3.7873
	Neither good nor bad	-1.39638(*)	0.4304	0.011	-2.5732	-0.2196
	Fairly good	-2.98352(*)	0.38926	0	-4.0478	-1.9192
	Very good	-4.38355(*)	0.41187	0	-5.5097	-3.2574
Neither good nor bad	Very bad	2.92299(*)	0.78264	0.002	0.7831	5.0629
	Fairly bad	1.39638(*)	0.4304	0.011	0.2196	2.5732
	Fairly good	-1.58714(*)	0.28356	0	-2.3624	-0.8118
	Very good	-2.98717(*)	0.31388	0	-3.8454	-2.129
Fairly good	Very bad	4.51013(*)	0.76078	0	2.43	6.5902
	Fairly bad	2.98352(*)	0.38926	0	1.9192	4.0478
	Neither good nor bad	1.58714(*)	0.28356	0	0.8118	2.3624
	Very good	-1.40002(*)	0.25454	0	-2.096	-0.7041
Very good	Very bad	5.91016(*)	0.7726	0	3.7977	8.0226
	Fairly bad	4.38355(*)	0.41187	0	3.2574	5.5097
	Neither good nor bad	2.98717(*)	0.31388	0	2.129	3.8454
	Fairly good	1.40002(*)	0.25454	0	0.7041	2.096

* The mean difference is significant at the .05 level.

H.7d Effect size = Sum of squares between-groups = 0.0196 = 0.02 = a small effect
Total sum of squares

H.8 One-Way Between-Groups ANOVA with Post-Hoc tests: Sense of community and residents' perceptions of their neighbourhood as a place to live

H.8a Test of Homogeneity of Variances

z_sense of community

Levene Statistic	df1	df2	Sig.
1.273	4	777	0.279

H.8b ANOVA

z_sense of community

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2672.456	4	668.114	94.207	0.000
Within Groups	5510.448	777	7.092		
Total	8182.904	781			

H.8c Multiple Comparisons

Dependent Variable: z_sense of community

Tukey HSD (I) appear	(J) appear	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
very bad	bad	2.69912	1.69427	0.502	-1.9333	7.3316
	neither good nor bad	-1.34684	1.56474	0.911	-5.6251	2.9315
	good	-3.40574	1.54476	0.179	-7.6294	0.8179
	very good	-5.91635(*)	1.54387	0.001	-10.1376	-1.6951
bad	very bad	-2.69912	1.69427	0.502	-7.3316	1.9333
	neither good nor bad	-4.04596(*)	0.76876	0	-6.1479	-1.944
	good	-6.10486(*)	0.72723	0	-8.0933	-4.1165
	very good	-8.61547(*)	0.72533	0	-10.5987	-6.6323
neither good nor bad	very bad	1.34684	1.56474	0.911	-2.9315	5.6251
	bad	4.04596(*)	0.76876	0	1.944	6.1479
	good	-2.05890(*)	0.3267	0	-2.9521	-1.1657
	very good	-4.56951(*)	0.32244	0	-5.4511	-3.6879
good	very bad	3.40574	1.54476	0.179	-0.8179	7.6294
	bad	6.10486(*)	0.72723	0	4.1165	8.0933
	neither good nor bad	2.05890(*)	0.3267	0	1.1657	2.9521
	very good	-2.51061(*)	0.20455	0	-3.0699	-1.9513
very good	very bad	5.91635(*)	1.54387	0.001	1.6951	10.1376
	bad	8.61547(*)	0.72533	0	6.6323	10.5987
	neither good nor bad	4.56951(*)	0.32244	0	3.6879	5.4511
	good	2.51061(*)	0.20455	0	1.9513	3.0699

* The mean difference is significant at the .05 level.

H.8d Effect size = Sum of squares between-groups = 0.3266 = 0.33 = a large effect
Total sum of squares

H.9 Independent-Samples T-Test: Sense of community and plans to move house in next few years

H.9a Group Statistics

	Q13 Move plans	N	Mean	Std. Deviation	Std. Error Mean
z_sense of community	No	461	0.4921	2.93153	0.13653
	Yes	266	-1.0276	2.83871	0.17405

H.9b Independent Samples Test

		Levene's Test for Equality of		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval Lower	Upper
z_sense of community	Equal variances assumed	0.016	0.9	5.457	779	0	1.28561	0.23561	0.82311	1.74811
	Equal variances not assumed			5.422	549.543	0	1.28561	0.2371	0.81987	1.75135

H.9c Effect size for independent-sample t-test

Eta squared = $\frac{t^2}{t^2 + (N1 + N2 - 2)}$ = 0.038 = 0.04 = a small - moderate effect

Expressed as a percentage (eta squared x 100), 4% of the variance in social interaction is explained by residents' plans to move house.

H.10 One-Way Between-Groups ANOVA with Post-Hoc tests: Sense of community and length of residence

H.10a Test of Homogeneity of Variances

z score_sense of community

Levene Statistic	df1	df2	Sig.
3.078	4	781	0.016

Because the assumption of homogeneity of variances has been violated (with a significance value of less than 0.5) a stringent significance level of 0.01 has been set for evaluating the results of the one-way ANOVA.

H.10b ANOVA

z score_sense of community

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	235.043	4	58.761	5.764	0.000
Within Groups	7961.437	781	10.194		
Total	8196.48	785			

H.10c Multiple Comparisons

Dependent Variable: z score_sense of community

Tukey HSD		Mean			95% Confidence Interval	
(I) appear	(J) appear	Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Up to one year	2-5 years	0.379	0.348	0.812	-0.572	1.329
	6-10 years	0.150	0.392	0.996	-0.923	1.222
	11-20 years	-0.759	0.382	0.273	-1.803	0.285
	21 years+	-0.961	0.355	0.054	-1.933	0.011
2-5 years	Up to one year	-0.379	0.348	0.812	-1.329	0.572
	6-10 years	-0.229	0.366	0.971	-1.230	0.772
	11-20 years	-1.137(*)	0.355	0.012	-2.108	-0.167
	21 years+	-1.339(*)	0.326	0.000	-2.232	-0.447
6-10 years	Up to one year	-0.150	0.392	0.996	-1.222	0.923
	2-5 years	0.229	0.366	0.971	-0.772	1.230
	11-20 years	-0.909	0.399	0.153	-1.999	0.182
	21 years+	-1.110(*)	0.374	0.025	-2.132	-0.089
11-20 years	Up to one year	0.759	0.382	0.273	-0.285	1.803
	2-5 years	1.137(*)	0.355	0.012	0.167	2.108
	6-10 years	0.909	0.399	0.153	-0.182	1.999
	21 years+	-0.202	0.363	0.981	-1.193	0.790
21 years+	Up to one year	0.961	0.355	0.054	-0.011	1.933
	2-5 years	1.339(*)	0.326	0.000	0.447	2.232
	6-10 years	1.110(*)	0.374	0.025	0.089	2.132
	11-20 years	0.202	0.363	0.981	-0.790	1.193

* The mean difference is significant at the .05 level.

As a significance level of 0.01 has been set because of the violation of the homogeneity of variances assumption, only one significant difference occurs between those residents who have lived in their neighbourhood for 2-5 yrs and over 21 yrs.

H.10d Effect size = $\frac{\text{Sum of squares between-groups}}{\text{Total sum of squares}}$ = 0.029 = 0.03 = a small effect

H.11 Independent-Samples T-Test: Sense of community and gender

H.11a Group Statistics

	Q29 Gender	N	Mean	Std. Deviation	Std. Error Mean
z_sense of community	Male	311	-0.2117	3.04267	0.17253
	Female	478	0.0979	3.32169	0.15193

H.11b Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
z_sense of community	Equal variances assumed	1.793	0.181	-1.322	787	0.187	-0.30957	0.2342	-0.7693	0.15015
	Equal variances not assumed			-1.347	702.605	0.179	-0.30957	0.22989	-0.76093	0.14179

Table H.11b shows that there is no significant difference between sense of place attachment for men and women.

H.12 Chi-square test for independence: Participate in sports groups and gender of respondent

H.12.1a Crosstabulation: Gender * Participate in sports groups

Gender		Participation in sports groups in nhd: No	Yes	Total
Male	Count	275	50	325
	Expected Count	263.6	61.4	325
	% within Gender	84.60%	15.40%	100.00%
	% within Sports groups	40.50%	31.60%	38.80%
	% of Total	32.90%	6.00%	38.80%
Female	Count	404	108	512
	Expected Count	415.4	96.6	512
	% within Gender	78.90%	21.10%	100.00%
	% within Sports groups	59.50%	68.40%	61.20%
	% of Total	48.30%	12.90%	61.20%
Total	Count	679	158	837
	Expected Count	679	158	837
	% within Gender	81.10%	18.90%	100.00%
	% within Sports groups	100.00%	100.00%	100.00%
	% of Total	81.10%	18.90%	100.00%

H.12.1b Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.231(b)	1	0.040		
Continuity Correction(a)	3.867	1	0.049		
Likelihood Ratio	4.321	1	0.038		
Fisher's Exact Test				0.046	0.024
Linear-by-Linear Association	4.226	1	0.040		
N of Valid Cases	837				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 61.35.

Using Yates' Correction for Continuity (a) the proportion of men who participate in sports groups in the neighbourhood (15.4%) is significantly different to the proportion of women who participate (21.1%).

H.12.2 Chi-square test for independence: Participate in other groups and gender of respondent

H.12.2a Crosstabulation Gender * Participate in other groups

		Participation in other groups in nhd		
Gender		No	Yes	Total
Male	Count	315	10	325
	Expected Count	305.6	19.4	325
	% within Gender	96.90%	3.10%	100.00%
	% within Sports groups	40.00%	20.00%	38.80%
	% of Total	37.60%	1.20%	38.80%
Female	Count	472	40	512
	Expected Count	481.4	30.6	512
	% within Gender	92.20%	7.80%	100.00%
	% within Sports groups	60.00%	80.00%	61.20%
	% of Total	56.40%	4.80%	61.20%
Total	Count	787	50	837
	Expected Count	787	50	837
	% within Gender	94.00%	6.00%	100.00%
	% within Sports groups	100.00%	100.00%	100.00%
	% of Total	94.00%	6.00%	100.00%

H.12.2b Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.937(b)	1	0.005		
Continuity Correction(a)	7.117	1	0.008		
Likelihood Ratio	8.672	1	0.003		
Fisher's Exact Test				0.004	0.003
Linear-by-Linear Association	7.928	1	0.005		
N of Valid Cases	837				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.41.

Using Yates' Correction for Continuity (a) the proportion of men who participate in sports groups in the neighbourhood (3.1%) is significantly different to the proportion of women who participate (6.0%).

H.12.3 Chi-square test for independence: Participate in sports groups and tenure

H.12.3a Crosstabulation Tenure* Participate in sports groups

		Participation in sports groups in nhd		
		No	Yes	Total
Own	Count	389	105	494
	Expected Count	401	93	494
	% within Tenure group	78.70%	21.30%	100.00%
	% within Sports groups_new	57.10%	66.50%	58.90%
	% of Total	46.40%	12.50%	58.90%
Social rent	Count	190	27	217
	Expected Count	176.1	40.9	217
	% within Tenure group	87.60%	12.40%	100.00%
	% within Sports groups_new	27.90%	17.10%	25.90%
	% of Total	22.60%	3.20%	25.90%
Private rent	Count	102	26	128
	Expected Count	103.9	24.1	128
	% within Tenure group	79.70%	20.30%	100.00%
	% within Sports groups_new	15.00%	16.50%	15.30%
	% of Total	12.20%	3.10%	15.30%
Total	Count	681	158	839
	Expected Count	681	158	839
	% within Tenure group	81.20%	18.80%	100.00%
	% within Sports groups_new	100.00%	100.00%	100.00%
	% of Total	81.20%	18.80%	100.00%

H.12.3b Chi-Square Tests

Value		df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.877(a)	2	0.019
Likelihood Ratio	8.434	2	0.015
Linear-by-Linear Association	1.435	1	0.231
N of Valid Cases	839.000		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.10

H.12.4a Crosstabulation Tenure* Participate in adult education

		Participation in adult education in nhd		
		No	Yes	Total
Own	Count	470	24	494
	Expected Count	465.7	28.3	494
	% within Tenure group	95.10%	4.90%	100.00%
	% within Adult ed_new	59.40%	50.00%	58.90%
	% of Total	56.00%	2.90%	58.90%
Social rent	Count	203	14	217
	Expected Count	204.6	12.4	217
	% within Tenure group	93.50%	6.50%	100.00%
	% within Adult ed_new	25.70%	29.20%	25.90%
	% of Total	24.20%	1.70%	25.90%
Private rent	Count	118	10	128
	Expected Count	120.7	7.3	128
	% within Tenure group	92.20%	7.80%	100.00%
	% within Adult ed_new	14.90%	20.80%	15.30%
	% of Total	14.10%	1.20%	15.30%
Total	Count	791	48	839
	Expected Count	791	48	839
	% within Tenure group	94.30%	5.70%	100.00%
	% within Adult ed_new	100.00%	100.00%	100.00%
	% of Total	94.30%	5.70%	100.00%

H.12.4b Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.934(a)	2	0.380
Likelihood Ratio	1.860	2	0.394
Linear-by-Linear Association	1.929	1	0.165
N of Valid Cases	839.000		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.32.

H.13 Independent-Samples T-Test: Trust and plans to move house in next few years

H.13a Group Statistics

	Q13 Move plans	N	Mean	Std. Deviation	Std. Error Mean
z_trust&recipr	No	523	0.3471	1.66232	0.07269
	Yes	273	-0.6766	1.84329	0.11156

H.13b Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
z_trust&recipr	Equal variances assumed	7.351	0.007	7.941	794	0	1.02366	0.12891	0.77062	1.2767
	Equal variances not assumed			7.688	504.578	0	1.02366	0.13315	0.76206	1.28526

H.13c Effect size for independent-sample t-test

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} = 0.069 = 0.070 = \text{a medium effect}$$

Expressed as a percentage (eta squared x 100), 7% of the variance in social interaction is explained by residents' plans to move house.

H.14. One-Way Between-Groups ANOVA with Post-Hoc tests: Trust and reciprocity and tenure

H.14a Test of Homogeneity of Variances

z_trust&recipr

Levene Statistic	df1	df2	Sig.
1.16	2	270	0.315

H.14b ANOVA

z_trust&recipr

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	54.965	2	27.482	8.537	0.000
Within Groups	869.215	270	3.219		
Total	924.18	272			

H.14c Multiple comparisions

z_trust&recipr

Tukey HSD					95% Confidence Interval	
(I) Tenure group	(J) Tenure group	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Own	Social rent	.72449(*)	0.30273	0.046	0.011	1.4379
	Private rent	.96411(*)	0.24253	0	0.3925	1.5357
Social rent	Own	-.72449(*)	0.30273	0.046	-1.4379	-0.011
	Private rent	0.23962	0.3183	0.732	-0.5105	0.9898
Private rent	Own	-.96411(*)	0.24253	0	-1.5357	-0.3925
	Social rent	-0.23962	0.3183	0.732	-0.9898	0.5105

* The mean difference is significant at the .05 level.

H.14d Effect size = Sum of squares between-groups = 0.063 = 0.06 = a quite small effect
Total sum of squares

H.14.1 One-Way Between-Groups ANOVA with Post-Hoc tests: Trust and reciprocity and household composition

H.14.1a Test of Homogeneity of Variances

z_trust&recipr

Levene Statistic	df1	df2	Sig.
1.788(a)	8	807	0.076

H.14.1b ANOVA

z_trust&recipr

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	102.584	9	11.398	3.589	0.000
Within Groups	2562.83	807	3.176		
Total	2665.414	816			

H.14.1c Effect size = Sum of squares between-groups = 0.038 = 0.04 = a quite small effect
Total sum of squares

H.15 Univariate Analysis of Variance (2-Way ANOVA): Safety, gender and age

H.15a Levene's Test of Equality of Error Variances(a)

Dependent Variable: z_safety

F	df1	df2	Sig.
0.52	11	642	0.89

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+ gender+ age+ gender * age

H.15b Tests of Between-Subjects Effects

Dependent Variable: z_safety

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	75.686(b)	11	6.881	2.642	0.003	0.043
Intercept	27.068	1	27.068	10.395	0.001	0.016
gender	12.809	1	12.809	4.919	0.027	0.008
age	52.573	5	10.515	4.038	0.001	0.03
gender * age	18.98	5	3.796	1.458	0.202	0.011
Error	1671.737	642	2.604			
Total	1755.964	654				
Corrected Total	1747.423	653				

a Computed using alpha = .05

b R Squared = .043 (Adjusted R Squared = .027)

Males and females differ significantly in terms of their feelings of safety. The effect size for this variable is 0.008, indicating that the actual difference in mean scores is very small. There is also a difference in scores for different age groups. The effect size for this variable is 0.030, indicating that the actual difference in mean scores is small-moderate.

H.15c Multiple Comparisons

Dependent Variable: z_safety

Tukey HSD						
					95% Confidence Interval	
(I) Q30 Age	(J) Q30 Age	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
16-24 yrs	25-34 yrs	0.5505	0.29949	0.442	-0.3055	1.4065
	35-44 yrs	0.7909	0.30496	0.1	-0.0807	1.6626
	45-54 yrs	0.376	0.30755	0.826	-0.5031	1.2551
	55-64 yrs	0.6841	0.31055	0.238	-0.2036	1.5718
	65 yrs+	1.0195(*)	0.30755	0.012	0.1404	1.8986
25-34 yrs	16-24 yrs	-0.5505	0.29949	0.442	-1.4065	0.3055
	35-44 yrs	0.2405	0.195	0.821	-0.3169	0.7978
	45-54 yrs	-0.1745	0.19904	0.952	-0.7434	0.3944
	55-64 yrs	0.1336	0.20364	0.986	-0.4485	0.7157
	65 yrs+	0.469	0.19904	0.173	-0.0999	1.0379
35-44 yrs	16-24 yrs	-0.7909	0.30496	0.1	-1.6626	0.0807
	25-34 yrs	-0.2405	0.195	0.821	-0.7978	0.3169
	45-54 yrs	-0.415	0.20718	0.342	-1.0072	0.1772
	55-64 yrs	-0.1068	0.21161	0.996	-0.7117	0.498
	65 yrs+	0.2285	0.20718	0.88	-0.3636	0.8207
45-54 yrs	16-24 yrs	-0.376	0.30755	0.826	-1.2551	0.5031
	25-34 yrs	0.1745	0.19904	0.952	-0.3944	0.7434
	35-44 yrs	0.415	0.20718	0.342	-0.1772	1.0072
	55-64 yrs	0.3082	0.21533	0.708	-0.3073	0.9236
	65 yrs+	.6435(*)	0.21098	0.029	0.0405	1.2466
55-64 yrs	16-24 yrs	-0.6841	0.31055	0.238	-1.5718	0.2036
	25-34 yrs	-0.1336	0.20364	0.986	-0.7157	0.4485
	35-44 yrs	0.1068	0.21161	0.996	-0.498	0.7117
	45-54 yrs	-0.3082	0.21533	0.708	-0.9236	0.3073
	65 yrs+	0.3354	0.21533	0.627	-0.2801	0.9509
65 yrs+	16-24 yrs	-1.0195(*)	0.30755	0.012	-1.8986	-0.1404
	25-34 yrs	-0.469	0.19904	0.173	-1.0379	0.0999
	35-44 yrs	-0.2285	0.20718	0.88	-0.8207	0.3636
	45-54 yrs	-.6435(*)	0.21098	0.029	-1.2466	-0.0405
	55-64 yrs	-0.3354	0.21533	0.627	-0.9509	0.2801

Based on observed means.

* The mean difference is significant at the .05 level.

H.16 One-Way Between-Groups ANOVA with Post-Hoc tests: Safety and age

H.16a Test of Homogeneity of Variances

z _safety

Levene Statistic	df1	df2	Sig.
0.156	5	651	0.978

H.16b ANOVA

z _safety

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	39.898	5	7.98	3.016	0.011
Within Groups	1722.342	651	2.646		
Total	1762.24	656			

H.16c Multiple Comparisons

Dependent Variable: z _safety

Tukey HSD					95% Confidence Interval	
(I) Q30 Age	(J) Q30 Age	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
16-24 yrs	25-34 yrs	0.55049	0.30188	0.451	-0.3123	1.4133
	35-44 yrs	0.79094	0.30739	0.105	-0.0877	1.6695
	45-54 yrs	0.37596	0.31001	0.831	-0.5101	1.262
	55-64 yrs	0.68411	0.31303	0.246	-0.2106	1.5788
	65 yrs+	.96587(*)	0.30909	0.023	0.0824	1.8493
25-34 yrs	16-24 yrs	-0.55049	0.30188	0.451	-1.4133	0.3123
	35-44 yrs	0.24045	0.19656	0.825	-0.3214	0.8023
	45-54 yrs	-0.17452	0.20063	0.954	-0.748	0.3989
	55-64 yrs	0.13363	0.20527	0.987	-0.4531	0.7203
	65 yrs+	0.41539	0.19921	0.296	-0.154	0.9848
35-44 yrs	16-24 yrs	-0.79094	0.30739	0.105	-1.6695	0.0877
	25-34 yrs	-0.24045	0.19656	0.825	-0.8023	0.3214
	45-54 yrs	-0.41498	0.20883	0.351	-1.0119	0.1819
	55-64 yrs	-0.10683	0.21329	0.996	-0.7165	0.5028
	65 yrs+	0.17493	0.20747	0.959	-0.4181	0.7679
45-54 yrs	16-24 yrs	-0.37596	0.31001	0.831	-1.262	0.5101
	25-34 yrs	0.17452	0.20063	0.954	-0.3989	0.748
	35-44 yrs	0.41498	0.20883	0.351	-0.1819	1.0119
	55-64 yrs	0.30815	0.21705	0.715	-0.3122	0.9285
	65 yrs+	0.58991	0.21133	0.06	-0.0141	1.1939
55-64 yrs	16-24 yrs	-0.68411	0.31303	0.246	-1.5788	0.2106
	25-34 yrs	-0.13363	0.20527	0.987	-0.7203	0.4531
	35-44 yrs	0.10683	0.21329	0.996	-0.5028	0.7165
	45-54 yrs	-0.30815	0.21705	0.715	-0.9285	0.3122
	65 yrs+	0.28176	0.21574	0.782	-0.3349	0.8984
65 yrs+	16-24 yrs	-.96587(*)	0.30909	0.023	-1.8493	-0.0824
	25-34 yrs	-0.41539	0.19921	0.296	-0.9848	0.154
	35-44 yrs	-0.17493	0.20747	0.959	-0.7679	0.4181
	45-54 yrs	-0.58991	0.21133	0.06	-1.1939	0.0141
	55-64 yrs	-0.28176	0.21574	0.782	-0.8984	0.3349

* The mean difference is significant at the .05 level.

H.16d Effect size = Sum of squares between-groups = 0.023 = 0.02 = a small effect
Total sum of squares

H.17 One-Way Between-Groups ANOVA with Post-Hoc tests: Safety and accommodation type

H.17a Test of Homogeneity of Variances

z _safety

Levene Statistic	df1	df2	Sig.
2.931	3	652	0.033

The assumption of homogeneity of variance is violated because the significant value (Sig.) is less than 0.5 for Levene's test (Pallant, 2001). The statistical validity of the tests below is questioned and they are reported for information only.

H.17b ANOVA

z _safety

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.217	3	9.739	3.662	0.012
Within Groups	1733.978	652	2.659		
Total	1763.195	655			

H.17c Multiple Comparisons

Dependent Variable: z _safety

Tukey HSD (I) Accomm groups	(J) Accomm groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Detached	Semi-detached	0.13451	0.25957	0.955	-0.5341	0.8031
	Terraced	0.05115	0.25429	0.997	-0.6038	0.7061
	Flat	0.57457	0.26878	0.142	-0.1177	1.2669
Semi-detached	Detached	-0.13451	0.25957	0.955	-0.8031	0.5341
	Terraced	-0.08336	0.15326	0.948	-0.4781	0.3114
	Flat	0.44006	0.17627	0.061	-0.0139	0.8941
Terraced	Detached	-0.05115	0.25429	0.997	-0.7061	0.6038
	Semi-detached	0.08336	0.15326	0.948	-0.3114	0.4781
	Flat	.52342(*)	0.1684	0.011	0.0897	0.9572
Flat	Detached	-0.57457	0.26878	0.142	-1.2669	0.1177
	Semi-detached	-0.44006	0.17627	0.061	-0.8941	0.0139
	Terraced	-.52342(*)	0.1684	0.011	-0.9572	-0.0897

* The mean difference is significant at the .05 level.

H.17d Effect size = Sum of squares between-groups = 0.017 = 0.02 = a small effect
Total sum of squares

H.18 Univariate Analysis of Variance (2-Way ANOVA): Safety, employment status and plans to move house in the next few years

H.18a Levene's Test of Equality of Error Variances(a)

Dependent Variable: z_safety

F	df1	df2	Sig.
1.035	12	635	0.414

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+ plans_move +emp_status+ plans_move * emp_status

H.18b Tests of Between-Subjects Effects

Dependent Variable: z_safety

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	60.725(b)	12	5.06	1.904	0.031	0.035
Intercept	0.455	1	0.455	0.171	0.679	0.000
plans_move	0.001	1	0.001	0.000	0.983	0.000
emp_status	35.144	6	5.857	2.204	0.041	0.020
plans_move * emp_status	13.972	5	2.794	1.052	0.386	0.008
Error	1687.411	635	2.657			
Total	1759.695	648				
Corrected Total	1748.135	647				

a Computed using alpha = .05

b R Squared = .035 (Adjusted R Squared = .016)

Respondents with different economic status differ significantly in terms of their feelings of safety. However, the effect size for this variable is 0, indicating that the actual difference in mean scores is zero.

H.19 Univariate Analysis of Variance (2-Way ANOVA): Safety, household income and plans to move house in the next few years

H.19a Levene's Test of Equality of Error Variances (a)

Dependent Variable: z_safety

F	df1	df2	Sig.
1.35	13	636	0.179

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+plans_move+hhd_income+ plans_move * hhd_income

H.19b Tests of Between-Subjects Effects

Dependent Variable: z_safety

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	124.972(b)	13	9.613	3.745	0.000	0.071
Intercept	5.879	1	5.879	2.290	0.131	0.004
plans_move	0.553	1	0.553	0.215	0.643	0.000
hhd_income	64.077	6	10.679	4.160	0.000	0.038
plans_move * hhd_income	37.551	6	6.259	2.438	0.024	0.022
Error	1632.651	636	2.567			
Total	1768.368	650				
Corrected Total	1757.623	649				

a Computed using alpha = .05

b R Squared = .071 (Adjusted R Squared = .052)

Respondents from households of different incomes differ significantly in terms of their feelings of safety. The effect size for this variable is 0.038, indicating that the actual difference in mean scores is quite small. There is also a difference in scores for respondents from households of different incomes who are planning to move house. The effect size for this variable is 0.022, indicating that the actual difference in mean scores is small.

H.20 One-Way Between-Groups ANOVA with Post-Hoc tests: Safety and household income

H.20a Test of Homogeneity of Variances

z_safety

Levene Statistic	df1	df2	Sig.
1.42	6	654	0.204

H.20b ANOVA

z_safety

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	94.439	6	15.74	6.037	0.000
Within Groups	1705.227	654	2.607		
Total	1799.666	660			

H.20c Multiple Comparisons

Dependent Variable: z_safety

Tukey HSD (I) hhd_income	(J) hhd_income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
<10,000	Missing value	0.21994	0.22035	0.954	-0.4318	0.8716
	10,000-19,999	-0.37539	0.23625	0.69	-1.0741	0.3233
	20,000-29,999	-0.29948	0.23809	0.871	-1.0036	0.4047
	30,000-49,999	-.72649(*)	0.21624	0.014	-1.366	-0.087
	50,000-79,999	-.83601(*)	0.24509	0.012	-1.5609	-0.1112
	>80,000	-0.14508	0.37685	1	-1.2596	0.9695
10,000-19,999	Missing value	0.59533	0.21694	0.089	-0.0463	1.2369
	<10,000	0.37539	0.23625	0.69	-0.3233	1.0741
	20,000-29,999	0.07591	0.23494	1	-0.6189	0.7708
	30,000-49,999	-0.3511	0.21276	0.65	-0.9804	0.2781
	50,000-79,999	-0.46062	0.24202	0.479	-1.1764	0.2552
	>80,000	0.23031	0.37487	0.996	-0.8784	1.339
20,000-29,999	Missing value	0.51941	0.21895	0.212	-0.1281	1.167
	<10,000	0.29948	0.23809	0.871	-0.4047	1.0036
	10,000-19,999	-0.07591	0.23494	1	-0.7708	0.6189
	30,000-49,999	-0.42702	0.21481	0.423	-1.0623	0.2083
	50,000-79,999	-0.53653	0.24382	0.297	-1.2577	0.1846
	>80,000	0.1544	0.37603	1	-0.9577	1.2665
30,000-49,999	Missing value	.94643(*)	0.19496	0	0.3698	1.523
	<10,000	.72649(*)	0.21624	0.014	0.087	1.366
	10,000-19,999	0.3511	0.21276	0.65	-0.2781	0.9804
	20,000-29,999	0.42702	0.21481	0.423	-0.2083	1.0623
	50,000-79,999	-0.10951	0.22253	0.999	-0.7677	0.5486
	>80,000	0.58142	0.36259	0.68	-0.491	1.6538
50,000-79,999	Missing value	1.05594(*)	0.22653	0	0.386	1.7259
	<10,000	.83601(*)	0.24509	0.012	0.1112	1.5609
	10,000-19,999	0.46062	0.24202	0.479	-0.2552	1.1764
	20,000-29,999	0.53653	0.24382	0.297	-0.1846	1.2577
	30,000-49,999	0.10951	0.22253	0.999	-0.5486	0.7677
	>80,000	0.69093	0.3805	0.538	-0.4344	1.8163
>80,000	Missing value	0.36502	0.36506	0.954	-0.7147	1.4447
	<10,000	0.14508	0.37685	1	-0.9695	1.2596
	10,000-19,999	-0.23031	0.37487	0.996	-1.339	0.8784
	20,000-29,999	-0.1544	0.37603	1	-1.2665	0.9577
	30,000-49,999	-0.58142	0.36259	0.68	-1.6538	0.491
	50,000-79,999	-0.69093	0.3805	0.538	-1.8163	0.4344

* The mean difference is significant at the .05 level.

H.20d Effect size = $\frac{\text{Sum of squares between-groups}}{\text{Total sum of squares}}$ = 0.052 = 0.05 = a medium effect

This table shows that the significant differences in feelings of safety are between respondents from households with incomes of less than £10,000, £30,000-49,999 and £50,000-79,999.

H.21 Independent-Samples T-Test: Sense of place attachment and plans to move house in the next few years

H.21a Group Statistics

	Plans_move	N	Mean	Std. Deviation	Std. Error Mean
z_place attachment	Yes	274	-0.7063	1.86433	0.11263
	No	522	0.3551	1.68766	0.07387

H.21b Independent Samples Test

		Levene's Test for Equality of		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Lower	Upper
z_place attachment	Equal variances assumed	3.872	0.049	-8.128	794	0.000	-1.06134	0.13058	-1.31767	-0.80501
	Equal variances not assumed			-7.88	509.016	0.000	-1.06134	0.13469	-1.32595	-0.79672

H.21c Effect size for independent-sample t-test

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} = 0.021 = 0.02 = \text{a small effect}$$

Expressed as a percentage (eta squared x 100), 2% of the variance in sense of place attachment is explained by residents' plans to move house

H.22 Univariate Analysis of Variance (2-Way ANOVA): Sense of place attachment, length of residence and plans to move house in next few years

H.22a Levene's Test of Equality of Error Variances(a)

Dependent Variable: z place attachment

F	df1	df2	Sig.
1.477	9	779	0.152

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+plans_move+ length_res +plans_move * length_res

H.22b Tests of Between-Subjects Effects

Dependent Variable: z place attachment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	286.777(b)	9	31.864	10.681	0.000	0.110
Intercept	2.517	1	2.517	0.844	0.359	0.001
plans_move	70.78	1	70.78	23.725	0.000	0.030
length_res	71.794	4	17.949	6.016	0.000	0.030
plans_move * length_res	18.181	4	4.545	1.524	0.193	0.008
Error	2324.042	779	2.983			
Total	2611.144	789				
Corrected Total	2610.819	788				

a Computed using alpha = .05

b R Squared = .110 (Adjusted R Squared = .100)

Respondents who are planning to move house and those who are not planning to move house differ significantly in terms of their feelings of place attachment to their neighbourhood. The effect size for this variable is 0.030, indicating that the actual difference in mean scores is small.

There is a difference in feelings of place attachment for respondents who have lived in the neighbourhood for different lengths of time. The effect size for this variable is also approximately 0.030, indicating that the actual difference in mean scores is small.

There is also a difference in scores for respondents who have lived in the neighbourhood for different lengths of time who are planning to move house. The effect size for this variable is 0.008, indicating that the actual difference in mean scores is very small.

H.22c Multiple Comparisons

Dependent Variable: z place attachment

Tukey HSD (I) length_res	(J) length_res	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Bound
Up to one year	2-5 years	0.0263	0.18763	1	-0.4867	0.5393
	6-10 years	-0.3618	0.21332	0.437	-0.9451	0.2214
	11-20 years	-.9513(*)	0.20545	0	-1.513	-0.3896
	21 years+	-.9742(*)	0.19121	0	-1.497	-0.4514
2-5 years	Up to one	-0.0263	0.18763	1	-0.5393	0.4867
	6-10 years	-0.3881	0.1996	0.295	-0.9338	0.1577
	11-20 years	-.9776(*)	0.19117	0	-1.5003	-0.4549
	21 years+	-1.0005(*)	0.17577	0	-1.481	-0.5199
6-10 years	Up to one	0.3618	0.21332	0.437	-0.2214	0.9451
	2-5 years	0.3881	0.1996	0.295	-0.1577	0.9338
	11-20 years	-0.5895	0.21644	0.051	-1.1813	0.0023
	21 years+	-.6124(*)	0.20297	0.022	-1.1673	-0.0574
11-20 years	Up to one	.9513(*)	0.20545	0	0.3896	1.513
	2-5 years	.9776(*)	0.19117	0	0.4549	1.5003
	6-10 years	0.5895	0.21644	0.051	-0.0023	1.1813
	21 years+	-0.0229	0.19469	1	-0.5552	0.5094
21 years+	Up to one	.9742(*)	0.19121	0	0.4514	1.497
	2-5 years	1.0005(*)	0.17577	0	0.5199	1.481
	6-10 years	.6124(*)	0.20297	0.022	0.0574	1.1673
	11-20 years	0.0229	0.19469	1	-0.5094	0.5552

Based on observed means.

* The mean difference is significant at the .05 level.

This table indicates that the significant differences in feelings of place attachment occur between residents who have lived in their neighbourhood for less than one year, 2-5 yrs, 6-10 yrs, 11-20 yrs and 21+ yrs.

H.23 Independent-Samples T-Test: Sense of place attachment and sex

H.23a Group Statistics

	Q29 Gender	N	Mean	Std. Deviation	Std. Error Mean
z_place attachment	Male	314	-0.1346	1.86603	0.10531
	Female	489	0.0732	1.79963	0.08138

H.23b Independent Samples Test

		Levene's Test for Equality of Variances F	Sig.	t-test for Equality of Means t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
z_place attachment	Equal variances assumed	0.336	0.563	-1.574	801	0.116	-0.20785	0.13204	-0.46704	0.05133
	Equal variances not assumed			-1.562	649.847	0.119	-0.20785	0.13309	-0.46919	0.05348

Table H.23b shows that there is no significant difference between sense of place attachment for men and women.

H.24 Factor Analysis of all Quality of the Built Environment and Social Cohesion variables

H.24a KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.644
Bartlett's Test of Sphericity	Approx. Chi-Square	988.407
	df	276
	Sig.	0.000

H.24b Component Matrix(a)

	Component						
	1	2	3	4	5	6	7
z_sense of community	0.814	0.325					
z_trust	0.81						
z_place attachment	0.79						
favour	0.741				-0.32		
z_social interaction	0.665				-0.312		
appear	0.557				0.434		
z_maintenance	0.442			-0.34	0.388		
z_social networks	0.394						
z_mixed use	-0.435	0.818					
z_density	-0.45	0.804					
z_access		-0.726	0.405				
z_attractive		-0.538	0.312		0.384	0.446	
frontage		0.386				-0.311	
z_connectedness			0.777				
open space in case study + 400m	0.488	-0.397	-0.653				
Adult_ed				0.596			
support_grp				0.517	0.312		
religious_grp				0.462		-0.312	
community_grp				0.458			
other_grp				0.439			
z_inclusiveness					-0.561		0.477
z_safety	0.305				0.405		0.315
z_legibility						0.694	
sports_groups				0.347			0.545

Extraction Method: Principal Component Analysis.

a 7 components extracted.

H.24c Rotated Component Matrix(a)

	Component						
	1	2	3	4	5	6	7
z_trust	0.914						
favour	0.858						
z_sense of community	0.766		0.432				
z_social interaction	0.754						
z_place attachment	0.687		0.459				
z_ social networks	0.493						
z_connectedness		0.856					
open space in case study + 400m		-0.83	0.315				
z_mixed use		0.673		0.507	0.438		
appear			0.727				
z_maintenance			0.717				
z_safety	0.657						
z_attractive		-0.868					
frontage		0.531					
z_legibility			0.792				
z_access		-0.462	-0.743				
z_density		0.614	0.622				
Adult_ed				0.628			
support_grp				0.617			
religious_grp				0.586			
community_grp				0.518			
other_grp				0.499			
z_inclusiveness							0.705
sports_groups							0.653

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 9 iterations.

H.24d Rotated Component Matrix(a)

	Component					
	1	2	3	4	5	6
z_trust	0.909					
favour	0.85					
z_social interaction	0.768					
z_sense of community	0.76		0.447			
z_place attachment	0.67		0.495			
z_ social networks	0.491					
z_attractive		-0.819				
z_density		0.771				0.423
z_access		-0.656	-0.326			-0.485
frontage		0.512				
appear			0.732			
z_maintenance			0.644			
z_safety			0.579			
z_inclusiveness			-0.469	0.421		
open space in case study + 400m			0.307	0.83		
z_connectedness				-0.825		
z_mixed use		0.641		-0.647		
Adult_ed					0.636	
support_grp					0.624	
religious_grp					0.58	
community_grp					0.51	
other_grp					0.5	
z_legibility						0.833
sports_groups						0.318

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 8 iterations.

Table H.25 Relationships between indicators measuring quality of the built environment and residents' perceptions of their neighbourhood as a place to live

Spearman's rho correlation coefficient

	neigh_place
z_dens	-.210**
z_muse	-.280**
z_access	-.074*
z_conn	-.117**
z_legib	-.057
appear	.645**
attract_gr	-.004
z_inclu	-.099**
z_maint	.361**
frontage	.063
z_safe	.388**

** = correlation is significant at the 0.01 level (2-tailed) * = correlation is significant at the 0.05 level (2-tailed) - = negative relationship